American

FEBRUARY 1954 50 CENTS

- **THE SIMPSON LOOKOUT** — ***Symbol of Shelton, Washington*** — ***page 19***
- **DAMSITES IN THE DINOSAUR?** — ***A Report on the Controversy*** — ***page 33***

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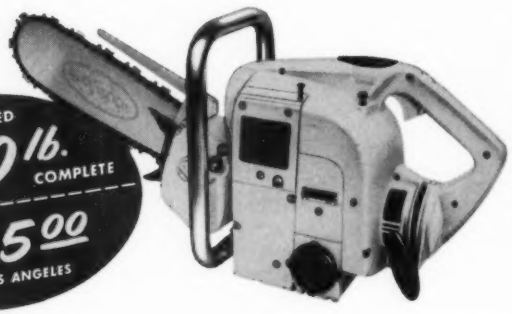

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Volume 60
No. 2
February, 1954

American FORESTS

James B. Craig, Editor
Dorothy B. Thompson, Editorial Assistant
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PUBLISHED BY THE AMERICAN FORESTRY ASSOCIATION

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COVER • *The city of Shelton, Washington, hub of the Simpson Logging Company's cooperative sustained-yield unit. Looking westward one sees thriving waterfront industries with private and government timber running up into the South Olympics in the background.*

THE AFA

The American Forestry Association, publishers of AMERICAN FORESTS, is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and their part in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

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Letters

The President's Picture

EDITOR:

. . . Thought the coverage of the President's address and the other speakers at the Forest Congress was fine but I certainly didn't like that picture of Ike on page 9 with his mouth drawn down. . . .

Eugene Williams
Standard Oil Building
Baltimore, Maryland

EDITOR:

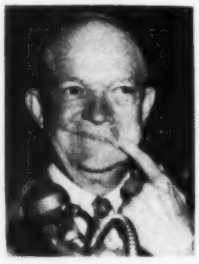
I don't think it was the right thing to do, publishing a picture of Ike in the pose as shown on page 9 in the December issue of AMERICAN FORESTS. May I ask just why?

F. Edward Biertuempfel
Mayor, Township of Union
Union County, New Jersey

EDITOR:

. . . What does that photographer have against our President?

(Mrs.) Lenora Johnson
Atlanta, Georgia



(Editor's Note—Personally, we thought it was a very human picture of a very human man. Apparently hundreds of newspaper and magazine editors who used Bill Smith's Associated Press photo of the President thought so too. Nevertheless, we are sorry if the picture offended Readers Williams, Biertuempfel and Johnson.)

EDITOR:

That was a striking candid photograph of the President on page 9. Something apparently had tickled him and I am wondering just what it was.

Elaine M. Owens
St. Louis, Missouri

(Editor's Note—The President had said, "I believe that every true American wants to pass on, without any stricture, the right of the individual to his own determination of what he is fitted for, of how he shall worship, of what he shall earn, of how he can save, and what he can do with his savings—subject to taxes." At this point the President commented "I should remark that even in such a crown of roses as we know has always been the promise and the share of our beloved America, there are some thorns—and taxes is one of them, I guess." The audience of 800 people chuckled and applauded. Apparently pleased by the response to this remark, the President then put his finger to his mouth as shown in Photographer Smith's photo.)

Reflective Suggestions

EDITOR:

The December issue of AMERICAN FORESTS appears to be a stimulating one. I have been part of the AFA for some time, and this is the first occasion on which I feel called upon to burden you with a letter.

(*Turn to page* 60)

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WHERE AFA STANDS

Editor's Note: Both the statements appearing on this page originally were letters to AFA President Don P. Johnston. The first letter, the gist of which appears in the box below, was written by Carl D. Shoemaker, editor of the Conservation News Service, and contained certain critical observations on AFA policies of the last few years. The second letter, appearing below in regular type, was written by AFA Executive Director-Forester Lowell Besley in reply to Mr. Shoemaker. In his letter Mr. Besley redefines AFA's conservation position and elaborates on the Association's plans and goals for the future.

THANK you for sending me a copy of Carl Shoemaker's letter to you of December 11. I appreciate, as I am sure you do, Carl's frank, constructive criticism. In general, I agree with him. The staff and I have been carrying on discussions for some time as to how we might overcome the weaknesses which Carl points out. Carl did not make, and I am sure that he did not intend, any recriminations for the past, but instead was suggesting a future course of action. Naturally this can be no overnight change, but must be built on a strong foundation and will evolve as we grow.

First of all, our new Program for American Forestry will give us a basic forest policy against which to test proposed legislation and administrative procedures. It may be necessary to fill in some details by action from time to time of the Board of Directors, but by and large I consider it my responsibility, with the help of my staff and individual Directors upon whom it may be feasible to call, to interpret these policies for the Association and to act upon them when needful and within the limitations of the resources of the Association.

Secondly, I believe that it is essential that we limit our activity to, and take stands upon, only those measures about which we can be fully informed. This has been our policy in the past and I believe it should be continued. The principal modification is that we must be informed on considerably more measures than we have been in the past. In this connection I hope that we can make more use individually of our Directors. If they are selected on the basis of their leadership in different fields having to do with forest conservation, each one of them should consider himself my adviser in his particular field of knowledge and help to keep me informed as to issues involved and desirable action to take on matters in that field. Of course, as soon as our resources permit, we need to add a forester and an assistant forester to the staff. The forester should be a mature individual who would be capable of representing us at hearings on the Hill and could keep completely informed with respect to what is going on in the Congress and Administration. This is a full-time job when Congress is in session. The assistant forester could carry on the full-time work of the Conservation Department and give real service to our members. This would free the Executive Director to represent the Association all around the country at various meetings and in individual contacts with conservation leaders and friends and supporters of the Association. It is only in this way that the Association can re-establish its leadership. The Forest Congress was a fine first step, but the ground gained will be lost unless we have an effective follow-up and a continuity of effort.

Thirdly, of course, we need to strengthen our magazine with more staff, more advertising and more

(*Turn to page* 54)

MR. SHOEMAKER'S LETTER

As an old college friend, I know that you will forgive me for making some observations to you relative to The American Forestry Association of which you are now the President.

Your Association, which is now more than 75 years old, and the magazine which you publish known as AMERICAN FORESTS, have had a long and distinguished career.

It has, in the decades gone by, been a leader in the field of forestry development and conservation. That it has recently come under attack and the launching of a movement to establish another organization to compete with it in the same field emphasizes, to my way of thinking, a re-examination of the reasons for this.

I have been a member of the Association for quite a number of years and have followed its work and its aims and objectives most carefully.

From my observations, and as a result of conversations with many others in the conservation movement, it seems to be pretty unanimous that in the last few years the Association has lost considerable following and influence in the field which it was organized to support.

The most frequent observation is that the Association has not taken a forthright view of many of the proposals introduced in Congress affecting the forests, their management and their products. Controversial measures have been either ignored or mildly supported or condemned. The Association should be the leader in all of the movements relating not only to the better management and wiser use of our own federally-owned forest reserves, but those under privately-owned management.

I, for one, do not favor a new organization in this field. The American Forestry Association should carry the ball and lead the parade. There is too much at stake to divide the forces by encouraging a new organization such as has been proposed. I regret to note that some of the sponsors of the proposed new organization are identified with other organizations in the conservation movement. This is not a wholesome situation. I believe that whatever may be needed to strengthen your organization should come from within itself and not from outside influences seeking to divide the responsibility for leadership.

By ALBERT G. HALL

"ALL FEDERAL CONSERVATION AND RESOURCE DEVELOPMENT PROJECTS are being reappraised. Sound projects now under way will be continued. New projects in which the federal government has a part must be economically sound, with local sharing of cost wherever appropriate and feasible. In the next fiscal year work will be started on 23 projects that will meet these standards." These words from President Eisenhower's state-of-the-Union message at the opening of the Second Session of the 83rd Congress set the stage for the legislative program. Other than the basic principles set forth above, the President has been far from specific. The specific recommendations will appear as administration-sponsored legislative proposals.

A UNIFORM AND CONSISTENT WATER RESOURCES POLICY and a revised public lands policy are promised. The President also has promised continued protection and improvement of national forests, parks, monuments and other natural and historic sites, and fishery and wildlife resources. He has expressed the hope that the Congress will pass pending legislation to improve the conservation and management of public-owned grazing lands in the national forests.

THE GRAZING BILL REFERRED TO BY PRESIDENT EISENHOWER in his state-of-the-Union message is the Aiken-Hope Bill, S. 2548, and its companion in the House, H.R. 6787. This is a successor to the so-called stockmen's grazing bill (S. 1509 and H.R. 4023) which encountered strong opposition. The new measure stands a good chance of becoming law. Favorable hearings were held on it by a subcommittee of the Senate Agriculture Committee this summer. It gives recognition to the rights earned by grazers by virtue of the improvements they make on the national forest ranges, and provides for court review of Forest Service and Department of Agriculture decisions on grazing problems.

CHANGES IN FOREST SERVICE POLICY AS IT AFFECTS GRAZING will also help to answer some of the grazers' objections to past practices. The new policy should encourage grazers to make additional range improvements since it will result in fewer adjustments of permits for the purpose of admitting new permittees or increasing the areas allotted to smaller permittees at the expense of the larger ones. It is stated "Because the West has become more stabilized, there is less need for such redistribution." Transfer cuts — those made in the number of permitted livestock when a base ranch changes ownership — also will be reduced to a minimum. Reductions in range use will be made when needed, without reference to the transfer of grazing privileges from one person to another. Often, in the past, such reductions were made at the time a stockman sold his ranch property or livestock. With these changes in policy and with the passage of S. 2548, to which there appears to be little objection, many of the problems of national forest grazing will be on their way to solution.

IN HIS ANNUAL REPORT, RICHARD E. McARDLE, CHIEF, U.S. Forest Service, points out that about 4.1 million cattle and sheep graze western national forests. Fees paid by 20,000 permittees in 1953 totaled $4.4 million. Range investments made by the federal government include $3.5 million for reseeding and $16.9 million for fences, watering improvements, driveways, etc. In the past ten years, permittees have spent $2.3 million for similar improvements on national forest land, and additional private contributions in materials and labor are valued at $650,000 (See story page 26).

(Turn to next page)

AREAS WITHIN THE NATIONAL PARK SYSTEM that are of questionable national significance may be transferred from federal to state or local jurisdiction, under a proposal by Secretary of the Interior Douglas McKay to preserve the national character of the system. Park or monument areas of purely local importance or used primarily for recreation by local people should, under current administration policies, be the responsibility of the local people. A similar view is taken toward parkways and roads which are not primarily of service to an area of national significance. Since the national park system is established by law, and most of the park and monument areas are likewise the results of specific legislation, it will be necessary that Congress act before any major changes can be effected.

THE PARKS PROPOSAL IS ONE OF SEVERAL made by a special committee that recently completed a survey of the National Park Service. Basic facts boil down to the Park Service having more areas and more problems in connection with them than the funds appropriated for the parks allow to be operated efficiently. Since park policies are rather clearly expressed both in legislation and regulation, the survey groups also recommended shifting some of the emphasis from the Washington, D.C. office and the regional offices to the parks themselves. This will provide more funds and personnel at the park and monument level. Such a reorganization is now being worked out.

ANOTHER PROPOSAL IS THE MODIFICATION OF PARK BOUNDARIES, particularly where Interior holdings, not particularly useful to the purposes of the parks, require policing, road maintenance and other expenditures. To purchase such holdings, often involving homes, stores and tourist accommodations, would mean expenditures far greater than park budgets can stand. The simplest solution, when not inconsistent with maintenance of park standards, is to shift such problem areas outside the parks. The proposals will be looked upon by many persons as the beginning of the dismemberment of the national park system. Actually, if the new policies are carried out judiciously, they can mean a strengthening of the system by more efficient management.

WILDLIFE AND RECREATION GROUPS ARE EXPRESSING dissatisfaction with the new joint policy statement of the Department of the Interior and the Department of Defense. The new policy calls for a minimum of land purchase for the purposes of reclamation, flood control and navigation improvement. Easements will be sought wherever feasible, and land purchases in the main will be restricted reservoir storage and flood peak areas. Unless specifically authorized by the Congress, land will not be purchased for wildlife or recreational purposes. Actually, under the former policy of land acquisition, land was not acquired specifically for wildlife or recreational purposes. Such land as was purchased beyond normal flood peaks often did, coincidentally, have wildlife and recreation possibilities. Under the new policy, flowage easements will be obtained but border land will not ordinarily be purchased. While the policy will not necessarily be more economical than the old ones, it will result in less federal ownership, and consequently less public land available for public use.

FOREST PRODUCTS AS FACTORS IN DEFENSE were given increased recognition by the establishment of an Interdepartmental Forest Products Committee, one of several commodity committees, serving in an advisory capacity to the Office of Defense Mobilization. The committee, which will advise ODM in the development of supply, requirements and technical data, consists of representatives of the Department of Defense, Department of Commerce, Department of State, Department of the Interior, Department of Agriculture, U.S. Tariff Commission and the General Services Administration. Within ODM, a Division of Agricultural and Forest Products is being established.

CITIZENS FOR CONSERVATION, INC., is the most recent conservation group to appear on the Washington scene. Announced in January, the new group will promote conservation of human and natural resources at the community level. President of the group is former Senator Gerald P. Nye of North Dakota.

EDITORIAL

Let's Not Desecrate the Dinosaur

An organization that regards our system of national parks and forests as the two greatest conservation achievements of our century. The American Forestry Association is gravely concerned over the recent proposal, as endorsed by the Department of the Interior, to build a dam in the heart of Dinosaur National Monument. The national parks and monuments have been set aside for the health and enjoyment of all the people of the United States. Most of these areas preserve scenic wonders which could not be duplicated if destroyed or severely modified.

The Dinosaur Monument is no exception. It was approved by an exacting historical board and created by executive order. Described by former Parks Director Newton B. Drury as "unique," the monument has two special attractions. One of these is the quarry of dinosaur fossils for which the monument is named. It is understood that this area would not be disturbed by the proposed dam. The other attraction consists of the deep river canyons of rare and wild beauty first brought to the attention of the public by the late John Wesley Powell. In the opinion of some, these canyons rival the more famous Grand Canyon of the Colorado River in picturesque grandeur. It is these canyons which would be partially filled by water backed up by a proposed dam at Echo Park. This water would greatly alter the present appearance of the monument.

The threat to Dinosaur Monument in its present natural state is embodied in three bills — H.R. 4443 introduced by Rep. Wayne N. Aspinall of Colorado; H.R. 4449 by Rep. William A. Dawson of Utah; and H.R. 4463 by Rep. Douglas R. Stringfellow of Utah. These bills call for the construction of initial units of the Colorado River Storage Project consisting of dams, reservoirs, power plants, transmission facilities and appurtenant works. As set up in the plan of the Bureau of Reclamation and approved by Interior, the initial projects outlined in the bills are listed as Echo Park Dam in Dinosaur National Monument, Flaming Gorge, Glen Canyon, Navajo and Curecanti.

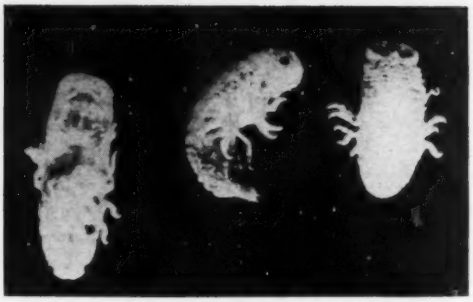
At this point The American Forestry Association would like to make it abundantly clear that it is in full sympathy with the need for developing the water resources of the West. More specifically, the Association is in accord with the broad outline of the Colorado River Storage Project to provide water for irrigation, and power for industry and municipal use in five western states. The key question in the case is not whether there should be a water storage project on the Colorado but whether it is necessary to invade a national monument to assure the success of this whole project.

What are the facts? Proponents of these bills, including Secretary McKay, Undersecretary Ralph A. Tudor (see page 39) and the Bureau of Reclamation would lead us to believe that the Echo Park Dam is a key link in the overall storage project and vital to its success. Opponents of the bills, including Major General U. S. Grant, III, former Interior Secretary Oscar L. Chapman and practically every conservation organization in the United States, declare that a judicious selection of alternative sites could accomplish substantially the same objective without going into the monument at all. For example, Former Secretary Chapman, who has been in touch with this project since its inception in 1950, informed AMERICAN FORESTS last month that "The Echo Park Dam and the Split Mountain Dam (also in the monument and proposed for future authorization by Interior) absolutely are not necessary." (See page 38.) General Grant, an officer in the Corps of Engineers for 43 years and presently president of the American Planning and Civic Association, is equally emphatic on this point. (See page 37.)

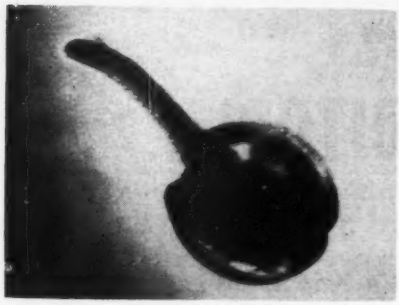
As clearly shown in the report on this problem starting on page 32, this is a case where the experts disagree. The American Forestry Association does not feel competent to judge on the relative merits of these sharply divergent technical viewpoints. It does feel it is reflecting the viewpoint of a puzzled public when it states that there appears to be a reasonable doubt as to the necessity of building a dam in the Dinosaur National Monument.

Furthermore, it does not appear that a thorough study on all possible alternates has yet been made by the Bureau of Reclamation. A sincere search should be made for an alternative which does not encroach upon existing parks and monuments. For whether the proponents for Echo Park admit it or not, invading a national monument would set a serious precedent — a precedent that the public is not likely to consider lightly once it is acquainted with the facts. Pending such a study and report, the other phases of the over-all Colorado River Storage Project, which are not in dispute, could proceed providing the Congress finds Reclamation's estimates and plans valid and in order.

Meanwhile, the Echo Park Dam should not be authorized.

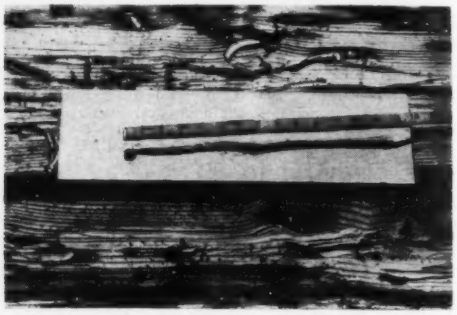


Uncontrolled attacks by borers like these cost the public millions of dollars yearly

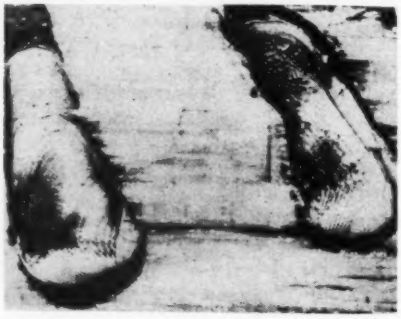


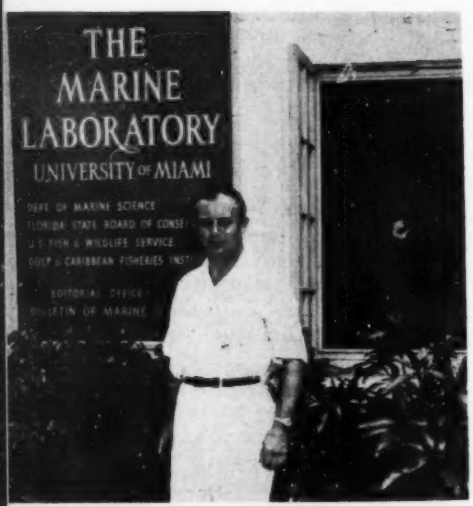
A young shipworm, magnified 200 times, crawling along test board

Example of damage done by the shipworm, one of the most destructive of marine borer family



Marine borers are universal problem, inhabit all the Seven Seas





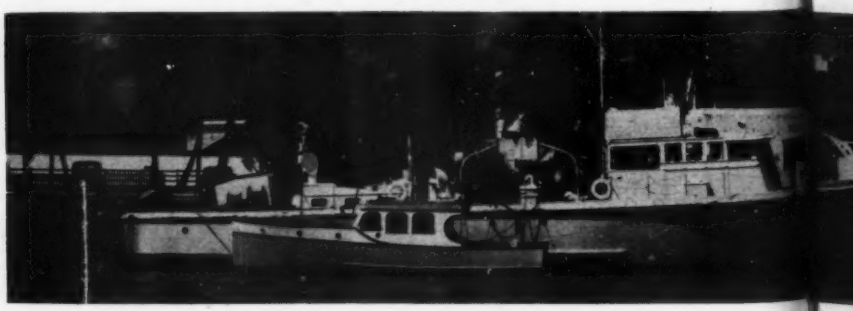
Dr. F. G. Walton Smith, director of marine laboratory at Florida's Miami U., world famous for oceanography studies

FRESH water can be a fairly good wood preservative. Timbers of ancient Roman galleys, which sailed Italian lakes 2000 years ago, have been found in sound condition only a few feet under the surface.

Salt or sea water might likewise be a preservative but for certain small but highly destructive organisms known collectively as "marine borers." Where they abound, which may be almost anywhere from the polar seas to the Equator, you will find no sound wood of any great age. If they are not consumed entirely, timbers attacked by the members of this large underseas family are so badly riddled that they become easy prey to the elements.

The borer damage toll in the tidal waters of the United States alone runs into the millions of dollars, and, as marine borers exist in all the seven seas, the total world loss must be enormous. The marine borer, in fact, can be considered one of the very real world-wide public enemies; its control one of the great unsolved problems of our times. While borer depredations have been checked by certain chemical treatments and preservatives, no sure-fire means of protecting wood completely from borer attacks has yet been found.

The situation, however, is by no means hopeless. A vigorous counter-attack has been launched—appropriately enough by the U. S. Navy.



Specially equipped ship is floating laboratory for U.S. Navy-Univ. of Miami fight against the "termites of the sea"

The Battle at the Tide Line

By E. JOHN LONG

Researcher Lawrence Isham counts number of shipworm burrows on experiment panel

Uncle Sam's Navy has launched a vigorous counterattack against a world-wide enemy of wood—the highly destructive marine borer

"But the Navy has mostly steel ships, hasn't it?" you ask.

Right, but it must also protect a taxpayer's investment of some $10 million worth of wooden piers, bulkheads, bridges, spars, small boats, floats and spars, belonging to the Navy in the United States and abroad. Damage has been heavy in some of our new outlying bases in the Pacific, particularly in the islands of the Aleutians. Vital defense dollars thus go down the drain, just as completely as they did in the days of wooden ships, when our losses to marine borers were greater than those to human enemies!

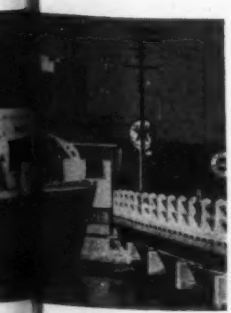
It is an old problem and a complex one. Navy scientists and engineers now recognize that marine borers cannot be conquered simply by chemical treatments of wood, nor by poisons that would also kill off other and beneficial forms of sea life. Another approach must be found.

So the Office of Naval Research and the Bureau of Yards and Docks have farmed the problem out to one of the leading centers of marine research in the world, the famous Marine Laboratory of the University of Miami, which has been conducting basic studies in oceanography and marine problems since 1942. The Navy has been assured by every authority on the marine borer that before any effective preventative measures can be taken, more will have to be known about the life cycle, habits, and basic characteristics of the pests.

For instance, no one really knows *why* these "nautical termites" bore into wood, nor why certain harbors and tidal waterways are heavily infested, while others, with the same or similar conditions, are not. Nor is anyone yet certain of the effective time period of the different commercial preservatives, nor what speeds or delays the leaching out of these preservatives.

It should be obvious that Dr. F. G. Walton Smith, director of the Marine Laboratory, and his biologists have undertaken a big assignment. An overnight solution is not to be expected. but enough progress has

Owners of waterfront property like this at Pompano Beach, Florida are among those who pay a heavy bill as result of borer attacks



been made and scientific findings are encouraging enough to induce the Navy twice to renew its contract. A number of other organizations, private and scientific, have associated themselves with the project.

Before we go into the results thus far, let's take a look at some of the over-all aspects of the job the Marine Laboratory has tackled, both in the field and at its own laboratories in Miami.

First, just what is a marine borer? Most familiar and widespread of some half-dozen such salt water enemies is the shipworm, which isn't a worm at all, although its naked snake-like body looks like one as it is pried from the wood. A better title is the Teredo, a name derived from the Greek *teredon*, whose depredations cost many a fine galley in classical times. Biologically it is related to the clam, and the shell-encased head it uses as a drill certainly looks like a pair of minature clam shells.

The Teredo or shipworm thus is a mollusk. Other marine borers in the mollusk group are the lesser known, but almost equally destructive, Pholads and the Martesia.

There is still another and entirely different borer family, the crustaceans, whose bigger cousins include crabs and lobsters. The subversive black sheep of this family are the Limnoria or gribble, the Sphaeroma or putty bug, and the chelura.

It took some time and a lot of doing, but marine borers have ruined these wooden pilings at the Navy yard in Charleston, South Carolina

Because the shipworm or Teredo is the most destructive, and also because is is physically the largest of the lot, much of the laboratory fire at Miami is being pointed in its direction. A very primitive form of life, the shipworm was in existence in much of its present form long before there were ships, even before primitive man began to roam the earth. Its first home was probably a water-soaked log, washed out to sea from a river in flood.

Scientists have divided the life span of the Teredo, like Gaul, into three parts: egg, larva, and adult. But the period of exact transition from one stage to another has not yet been determined. This is important to know, because then the creature undergoes violent change and strain, and it is during such critical periods that its life might more easily be snuffed out.

For instance, laboratory tests are being run to determine when the eggs are fertilized, leading to the larval stage. One theory among scientists holds that fertilization takes place within the parent; another that the eggs are fertilized in the water after ejection from the parent. The correct answer may provide the clue to a practical means of extermination at this point.

In its tiny larval stage the Teredo lives like any other bivalve mollusk. It can move about freely in open water, and sometimes drift considerable distances by taking advantage of the tides. And it can withdraw for protection from other minute marine life within its two small clam-like shells, hinged at the top.

When the time finally comes for it to settle down, the larval Teredo attaches itself to a piece of wood—generally a piling or bulkhead plank. By moving its shells it bores a tiny hole, no bigger than a pinhead, and *disappears from the outside world forever!* Once inside the wood, the larval shells become the basis for forming larger and more powerful cutting shells. It also develops siphons to draw in fresh sea water, and a two-pronged tail, called pallets, which, if an enemy tries to get inside the Teredo's burrow, can tightly plug the opening.

X-ray photo of wooden panel exposed in bay near Miami for only six months. All shipworms shown are alive, actively at work deep in wood

From the sea water the Teredo is believed to get plankton, that minute form of life that supports so many of the creatures of the ocean. And, as its clamshell head bores deeper into the wood, the Teredo's body grows to fill the cavity it forms.

The Teredo is the most invidious of marine borers because even the most heavily infested timber gives no outward sign that it is a mere shell within, subject to collapse without warning. Because the original pinhole opening is never enlarged, the presence of Teredo activity usually isn't suspected until too late. Samples of piling that passed *external* inspection have been found to be so riddled with Teredo burrows that within they resembled great shafts of swiss cheese.

In comparison, the Limnoria or gribble operates almost like a gentleman. No bigger than a grain of rice when full grown, this crustacean does its boring with a strong pair of jaws. Working near the surface, it can honeycomb wood in such a manner that wave action soon exposes its presence by washing away bits of wood. This gives piling the familiar "hour glass" shape, as waves expose new areas to attack. Where there is little spread between the tides, Limnoria can sometimes work unobserved, but if a sampling of the sub-surface wood brings up spongy fibers—gribbles are at work!

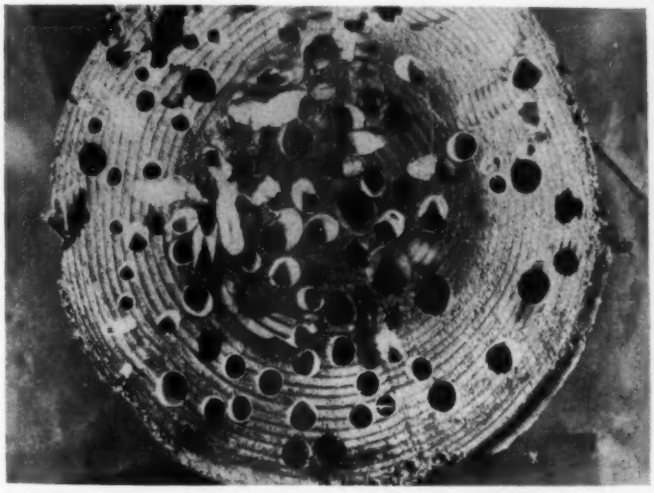
Another member of the same evil order, the Sphaeroma, is known in Florida and elsewhere along the Gulf coast as the putty bug. It likes the caulking used in the seams of small boats, and it also has the unwelcome distinction of being able to survive equally well in both fresh and salt water.

Chelura, slightly larger than Limnoria, might be called a subleasor, because it enlarges existing burrows, for its own occupancy, made by Limnoria.

The other two members of the mollusk group, the Pholad and Martesia, really look like small clams. Their bivalve shells, like blunt arrows, dig long tunnels that cross and recross until a cross-section of wood they attack has an even cheesier appearance than that riddled by Teredos of the same group.

In addition to detailed biological studies, X-ray experiments, and other investigations of the life cycles of the various marine borer organisms, the Marine Laboratory is giving a great deal of attention to the effectiveness of various creosotes. Dr. Smith and the others engaged in the project believe that creosoting still remains the best and least costly protective device for exposed wood, but, although various creosotes now on the market may look alike and they may call for the same concentration (20 pounds per cubic foot), there seems to be a difference in lasting qualities. Some have been known to last 15 to 30 years, others considerably less.

Rear Admiral J. F. Jelley, USN., late chief of the Navy's Bureau of Yards and Docks, had this to say, in a recent speech, about creosoting methods and techniques:



Graphic example of marine borer action is this section cut from an untreated fender pile at a pier in Adak, Alaska

"I feel that the federal specifications, as well as most of the other standard specifications of creosote oil, have been written for the convenience of the distillers and have no sound scientific basis. . . As far as I can determine, no systematic studies have been made to determine the effective chemical compounds of coal-tar creosote which inhibit the entrance of marine borers. The situation has not changed in 25 years. It is still unknown exactly what specific qualities in the creosote are essential to give the longest service to creosoted piles."

Scientific study of the problem had its inception, however, as long ago as 1922, when the National Research Council investigated the distribution of marine borers and the taxonomy, or classification and identification, of the different types of borers.

There was even a sporadic attempt to place test panels in various parts of the world, a project in which the Bureau of Yards and Docks cooperated. The late Dr. William F. Clapp, noted biologist of Duxbury, Mass., collected and studied these panels and a considerable amount of accurate information was obtained. But the net result was theories, rather than conclusions based on sound and extensive research. No one knew for sure whether creosoting protected wood for limited periods because of toxic action, or whether it simply slowed up the digestive processes of the borers.

Could the compounds of creosote be strengthened in any way to prevent or delay their being leached out by sea water? What of the merits of iron and silica compounds in lieu of creosote?

This is where, in 1948 the Marine Laboratory came into the picture. Since that time Dr. Smith and his associates have developed a technique of raising marine borers in captivity, with the obvious advantage of being able to observe the creatures under controlled laboratory conditions. Thus living specimens may be brought not only under the microscope, but also before the X-ray camera which can photograph them as they go about their nefarious work deep in the wood.

Because the Marine Laboratory headquarters occupies one of the buildings of the old University of

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One Woman's Vision

Martha Berry, left, and Oak Hill, above, her palatial fam home, which is now a showplace and property of Berry Schoo

AN education otherwise quite beyond their dreams and resources has been made available to hundreds of boys and girls from the forested and farming area around Mount Berry, Georgia because of the vision, devotion and determination of a woman who dedicated her life to the principle that the price of knowledge should not always be measured in terms of dollars and cents. That woman was Martha Berry, founder, and until her death in 1942, director of the Berry Schools, institutions of higher learning where the right to an education is not bought, but is earned with intelligence, initiative and hard work.

Less than half the young men and women enrolled in the Schools pay any cash. The others work their way. All work on the campus is performed by the students under expert supervision. Students are busy early and late, six days a week, in some 25 different projects—farming, forestry on the 25,000 acres planted in pine by Miss Berry, poultry raising, wood working, weaving, preserving. These projects are the basis of the financial arrangements that make an education available to the students. However, at Berry, as at all self help schools, the program costs more than the total income of the school. Consequently, $150,000 must be raised annually to keep alive Martha Berry's dream of an education for those who otherwise couldn't afford it.

Instructor introduces younger boys to the fundamentals of good carpentry work

This is the up-to-date wood working shop in industrial arts division of Berry College

Berry Schools' prize-winning Jersey herd heads for pasture

All woodwork, paneling and furniture in this sitting room of a Berry guest house was made by men students

Suits from sacks — a favorite project in home economics class

Berry operates its own sawmill where timber cut in the forest can be sawed for Schools' use or for sale

Possum Trot Community School, oldest of Berry Schools, now operates as elementary school for area children

Student finishing meticulous reproduction of an antique kneehole desk

"The Sunday Lady of Possum Trot," as he students called her, sitting before fir

Like giant sentinels, Sequoias tower above Generals Highway in California

Tourist is awed by the Lincoln Tree in Sequoia National Park, California

Famous Forests

THE BIG TREES

By CREIGHTON PEET

The Sequoia gigantea, the oldest and biggest living things on earth, date to the dawn of man's history

IN September of 1858 a California pioneer named Hale Tharp, living near Three Rivers, was looking for a good summer pasturage for his cattle. Chief Chappo of the Kaweah Indians with whom Tharp was friendly, said he knew of a likely spot, and to his astonishment Tharp was taken to a grassy meadow near a grove of the Big Trees—the Sequoia gigantea—the oldest and biggest living things on earth.

Tharp was not the first to discover such trees—a Captain Joseph Walker reported seeing some in 1833, but his mention appears to have gone unnoticed, and it was only after Tharp returned to tell others of his incredible find, and finally moved in his livestock to make good his claim to the land and the trees, that they began to attract visitors from all over the world.

Very soon travelers and naturalists, including the famous John Muir, realized that these magnificent trees were a priceless heritage—and unique on the face of the earth. Some of them were 300 to 330 feet high and up to 30 feet in diameter even above the stump-swell (ten feet above the ground). A count of the annual rings on the stumps of those cut down showed they were between 3000 and 4000 years old! Nowhere, at any time had living things of this age been found. These trees went back to the very beginning of man's history.

What was not known at that time, but has since been established from the study of fossils found in Alaska, Greenland, Europe and other parts of the world, is that millions of years ago, in the Miocene period trees of the Sequoia group such as the Big Trees and their cousins the California redwoods, covered much of the earth. These few thousand trees in California were a miraculous survival from another age.

It seems appalling to us today, but the first instinct of most of the pioneers was to chop down as many thousands of these venerable giants as fast as possible—not to get lumber—for only a very small fraction of this wood ever reached a sawmill—but seemingly just for the fun of it. Old photographs show whole valleys covered with trees abandoned where they fell. In some cases they fell awkwardly, and always they were too big to handle by ordinary logging methods. Very often, too, they shattered when they fell, for the Big Tree is brittle, and not a commercial wood. (The redwood, on the other hand is very useful indeed.)

Obviously these early ax wielders were not lumbermen in our modern sense: chopping down trees for the fun of it made no more sense than did the slaughter of tens of thousands of buffalo on the western plains. The attitude of these people toward the Big Trees is best shown by the use to which the stump of the first one cut down in the Calavaras Grove was put: it was used as the floor of a tiny dance hall in which 21 couples could dance. This stump was 27 feet in diameter, and the tree was estimated to have been 1300 years old. At the time such sideshow gimmicks seemed more important to settlers than the age, beauty or scientific value of the Big Trees. It was also about this time that a big section of the bark of another tree 32 feet in diameter was cut off and shipped to Paris for an exposition.

The Big Trees are found in some 72 groves scattered along the western slopes of the Sierra Nevada Mountains in California in a strip about 250 miles long reaching from the American River on the north to Deer Creek on the south. These Big Trees are related to the California redwoods. but in many ways are quite different. However, both may be spoken of as Sequoias.

The Big Tree, or Sequoia gigantea, grows at an elevation of from 4000 to 8500 feet in a fairly dry, cool climate. In winter there is often six

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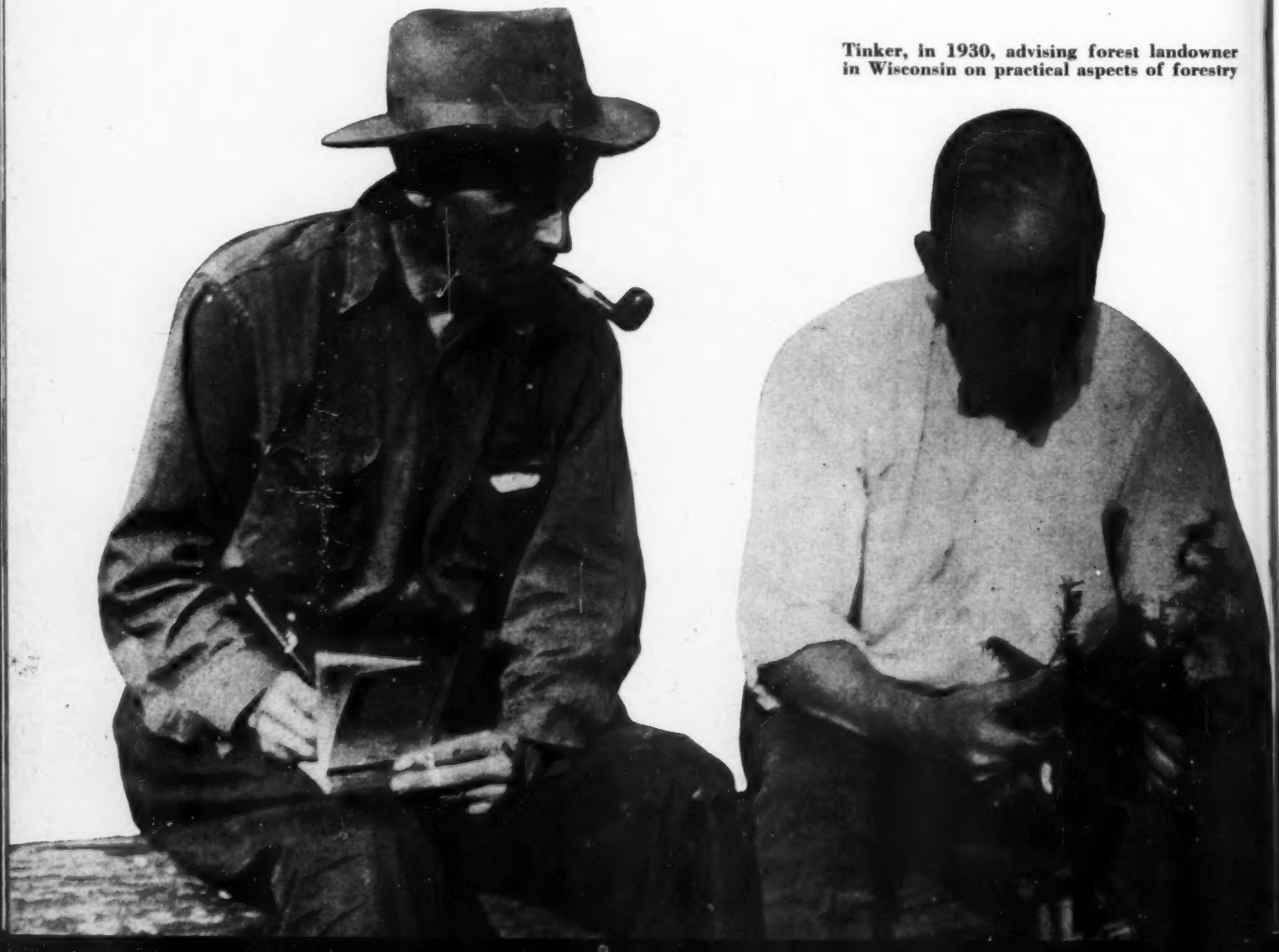
A grove of Sequoias, lofty and majestic in their summer regalia

Man from the Hurricane

By NARD JONES

His direction of timber salvage following the disastrous Northeast hurricane of 1938 started ex-forester Ted Tinker on a distinguished career as key spokesman for the American Paper and Pulp Association



Tinker, in 1930, advising forest landowner in Wisconsin on practical aspects of forestry

LATE last Fall a key figure in the pulp and paper industry got up quietly in the Fourth American Forest Congress of The American Forestry Association to announce that the industry is managing 28 million acres of forest land and employing 1233 professional foresters.

He was E. W. (Ted) Tinker, known to a limited number of people as the executive secretary of the American Paper and Pulp Association, a so-called "trade association" for the sixth largest U. S. industry. But professional foresters know him as an ex-assistant chief of the U. S. Forest Service.

So Ted Tinker got full attention in his five-minute talk at the Forest Congress, and what he had to say certainly marked an epoch in the American forest picture. In fact, as this ex-forester himself expressed it: "If at previous conferences we had had figures of this kind to consider, our viewpoint of the future of private forestry and industrial forestry in this nation would have been changed."

He went on with his vital statistics. The pulp and paper industry has 26 forest tree nurseries with a productive capacity of 80 million trees a year. It distributes about 31 million trees to forest farmers — and it spends about five million dollars a year for forest fire protection.

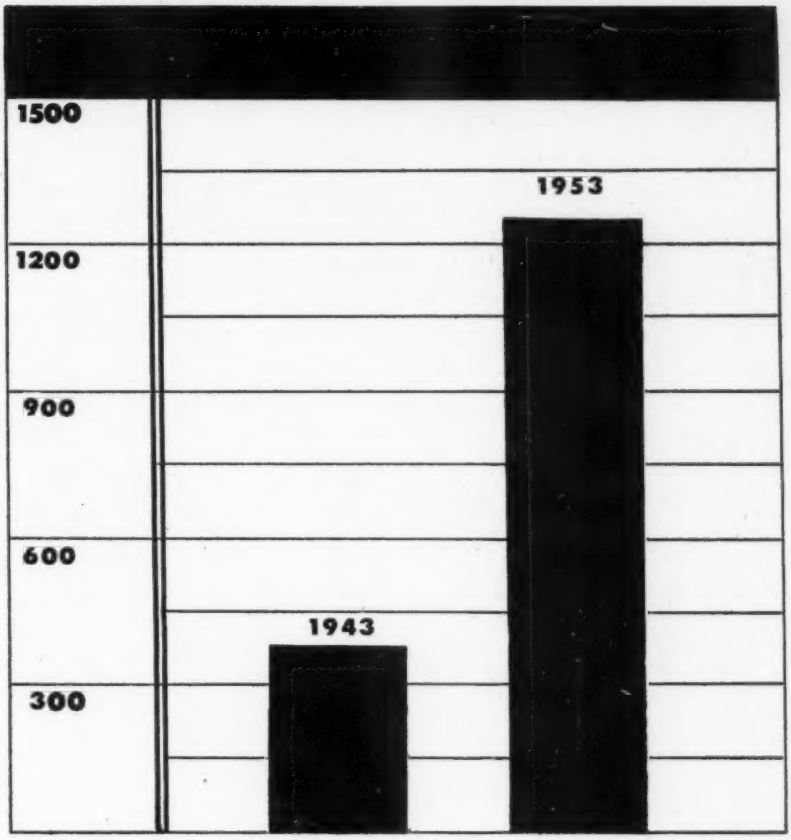
The deceptively slight and quiet Mr. Tinker had other statistics, but he did not belabor the Congress with them. Having stated the basic situation in pulp and paper with regard to forestry, he wound up with a friendly haymaker and let it fly.

"When the next Forest Congress is called," he predicted, "the public foresters are going to be regarded as custodians of the forests rather than managers — unless there is a radical change in the viewpoint of public foresters in public forest management policies."

As if that did not make the public foresters look thoughtful enough, Ted Tinker went on: "Contact between public foresters and private foresters is inevitable, due to the intensive forest conservation that is economically necessary with this vast area in private ownership. And if that fact isn't recognized by public foresters, then you will be viewed as custodians, not forest managers."

He added that, as "an ex-Forest Service employee," he would regret this very much.

It was a tough-fibered stance to take before such a cross-section of American forestry and conservation interests in the nation's capital. But Ted Tinker had the statistics to back it up, a preliminary tabulation which AMERICAN FORESTS reproduces with this story.



Months ago the executive secretary of American Paper and Pulp Association began to have a strong hunch, and he began asking his membership a set of searching questions about their forestry practices. Tinker had an abiding faith in the result. Nobody knew better than he that the industry had made progress, for Tinker himself was responsible for a good deal of that progress.

Claims had been made, and sincere convictions uttered. As long ago as July 1952, this writer had stated in an industry newsletter: "Perhaps it's time for someone to state clearly that lately the wood-using industries, with pulp and paper leading, have been making the fastest progress toward a true American forestry policy."

That statement was inspired by a talk with Ted Tinker. Obviously he thought so too. But there were no facts — and without facts one man's belief was as good as another's.

The survey that Ted Tinker made proved conclusively that pulp and paper had indeed led the way toward establishment of a modern forest policy for the social and economic use of trees. This was actually to the astonishment of the industry itself. A very great deal had been happening to the pulp and paper industry, far more than mere attainment of sixth place among major industries. It had, within 15 or 20 years, completely changed in character. Before 1925 it was largely dependent upon wood pulp from abroad, chiefly from the Scandinavian countries. But within two decades, through a great depression and a world war, it had developed its own North American wood pulp industry.

This meant that the mills manufacturing paper and paper products, and other things made from wood cellulose fibers, had become based upon North American raw material. It meant, as well, that this raw material had to be based upon sound forestry practices, upon trees grown as crops in perpetuity.

Because of the great world-wide demand for paper and paper products, this had to happen fast — and the industry had been making it happen fast. So fast that but few of

its leaders saw the whole thing in complete objectivity.

Of course, a few did — but even more to the point, the staff leader of the industry association saw it, very clearly. He could see the whole of it from his vantage point in New York's tall Chanin Building, and whenever he went to Washington, which was, and is, plenty often.

And whenever he was in doubt he took a field trip, to the woods and to the mills. The last time this writer interviewed Ted Tinker was in a far western bus, on a back road somewhere between the St. Helens Tree Farm and the sprawling mill town of Longview on the Columbia River.

He had just got the final results of his forestry questionnaire and was full of the subject. Even then, last midsummer, he was trying to decide whether to let fly at the Forest Congress or simply let the figures speak for themselves.

He had about decided to let fly, for several good reasons. One was that statistics don't always speak for themselves clearly. Another reason was that Ted Tinker felt that this was mighty strong proof of the good and efficient working of the competitive enterprise system.

A third reason was that Tinker still has a deep loyalty to the old Forest Service — and he felt that many public foresters were on the wrong path of thinking, a path that could be detrimental, if not disastrous for them.

In short, he had a conviction about the future and felt he ought to share it where it would do the most good. Tinker's definite ability to predict has some of his staff in awe. Said one of them to this writer last winter: "Did you read about that new lumber made out of sawdust? Harder than a board, and cheaper to make? You know, Ted Tinker told me ten years ago they were going to do that. He's always been able to see the future!"

There's nothing mysterious about Tinker's ability with the crystal ball where forestry is concerned. He was raised with forestry, and knows just about all of its meanings and its potentialities. He didn't change when, as executive secretary of the trade association, he became what he calls "a businessman" — to distinguish one kind of individual from another — a forester. He himself admits that while the pulp and paper industry could take him out of the forests, they couldn't take the forests out of *him*.

And the cold fact is that the pulp and paper executives never really did take Ted Tinker out of the forests. Actually, he was blown out — by a hurricane — that unforgettable Northeast blow of 1938.

He was, when the hurricane struck, assistant chief, U. S. Forest Service, right next to the top man. His specific charge, however, was the branch of state and private forestry. He had come to that job from the post of regional forester in the North Central Region which he had established. And in that establishment he had delineated the national forest units of the region, acquired forest land, and initiated the now tremendous forestry program there.

Ted Tinker was too busy to notice it then, but was even at that time under the watchful eye of a number of pulp and paper executives in the North Central area. They had to approve of his loyalty to the Service, and they liked his knowledge and consideration of their own practical problems. One of these men was D. C. Everest, now chairman of the board of Marathon Corporation, and to become a president of American Paper and Pulp Association. However, Ted Tinker went on to Washington.

Then came the terrible hurricane of 1938. Thousands of acres of trees were blown down in the Northeast states, and something had to be done about it quickly. It was the kind of damage that could not be repaired, but those "down" trees had to be got out of there before they caused fires and hindered the regrowth which now would be more vital than ever. Moreover, they had to be removed without wastage, and this meant disposing of them to manufacturers.

It was a big job, a tough job that had to be done in a hurry. And it was fraught with political dynamite. Ted Tinker got that job.

Almost at once he did an amazing thing. He quickly saw that the ordinary machinery of the Forest Service, indeed of any government agency, would be far too slow and cumbersome to do this job in the time allotted by nature. The hurricane had struck fast, and Tinker had to strike back with something like similar speed.

So he organized the Northeastern Timber Salvage Administration. It worked with, but separate from, the Forest Service. But most of all it worked with the people, the woodlot owners, the highway commissioners and the city councils, and the manufacturers who could use the timber. It was a kind of martial law unto itself, yet it had due regard for the various rights of folks involved — and, as Tinker recalls, just about everybody in the Northeast was involved.

Private industry stood agape at the efficiency of the newly-formed emergency NTSA. They looked again at Tinker. About this time the American Paper and Pulp Association needed an executive secretary. Whether they consciously looked for a forester is not part of the record, but it's fortunate they got one, as subsequent events proved.

Tinker took the job, reluctantly at first, but with increasing enthusiasm. It wasn't easy to part from the Service he loved and to which he had devoted all his life since 1915. In 1940 the pulp and paper industry had only faintly begun to take its present shape. It was still a somewhat heterogenous collection of mills, without much of a common denominator, still resting in large measure on a foreign wood pulp supply.

From a distance, the APPA looked very much like many another trade association. It was, to the outsider, just a collection of industrial memberships with a "cushy" job for some fellow skilled in the art of trade association work. To those in the latter profession, Tinker seemed a misfit indeed. And many of those in the Forest Service felt that Tinker had traded his training and his profession for a mess of pottage.

Within a few weeks after Tinker became executive secretary of the trade association, the post of chief of the U. S. Forest Service fell vacant. By training, background, seniority and other factors, Tinker — had he stayed on in the Service — would have been a leading candidate. A number of sages in Washington nodded their heads wisely, and asked Ted Tinker if he wasn't sorry he had made the jump "from forestry to business."

The man would not have been human if, at this time, he had no doubts. But he never expressed them, so far as can be discovered, then or later.

And, after all, Tinker was not quite such a stranger to the industrial world as many believed. He had, in fact, begun his career in a job which — like the present one — joined forestry and industry.

After graduation from the Yale Forest School, Tinker had gone

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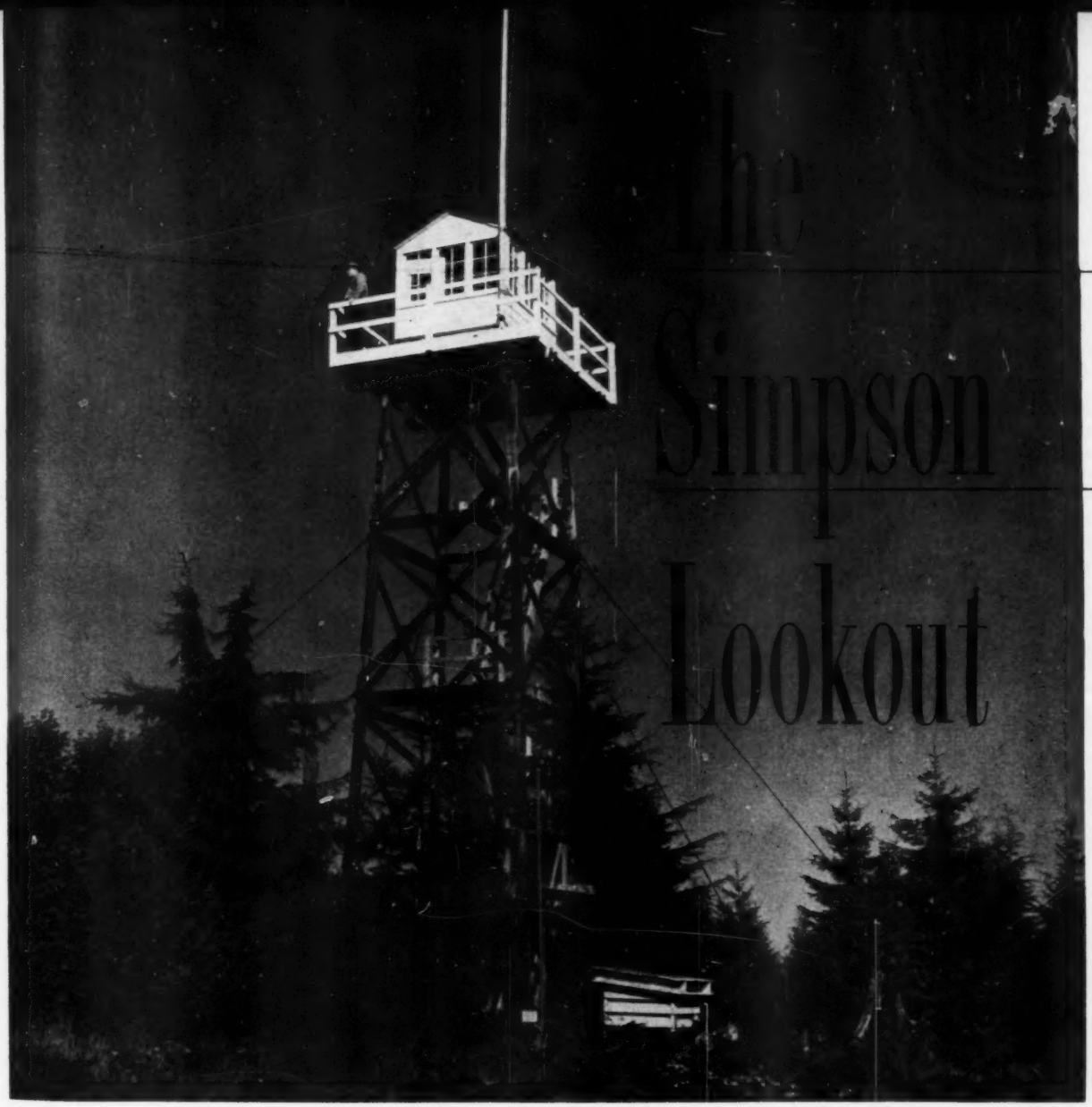


The Simpson Lookout

By JAMES STEVENS

JOHN McRAE, farmer-logger, Route 1, Shelton, Washington, said that back in 1923 he could sit on a horse and spot a white cow in the stumps, up to three miles away. Now a man would need a horse 50 feet tall to see that far from the same trail.

"And he would see no white cow," said Mr. McRae. "Only trees."

Mr. McRae spoke as one of 15 applicants for West Coast Tree Farms certificates on freeholds that amounted to 2261 acres of forest land in Mason County. The hearing followed a luncheon of the Kiwanis Club of Shelton, county seat, forest industry center of the Lower Olympic Peninsula for a full century.

Farmers, loggers, business and professional people who had invested in tracts of cutover land years ago, made up the applicants. The hats of wives and mothers were pretty and bright among domes bald and grizzled.

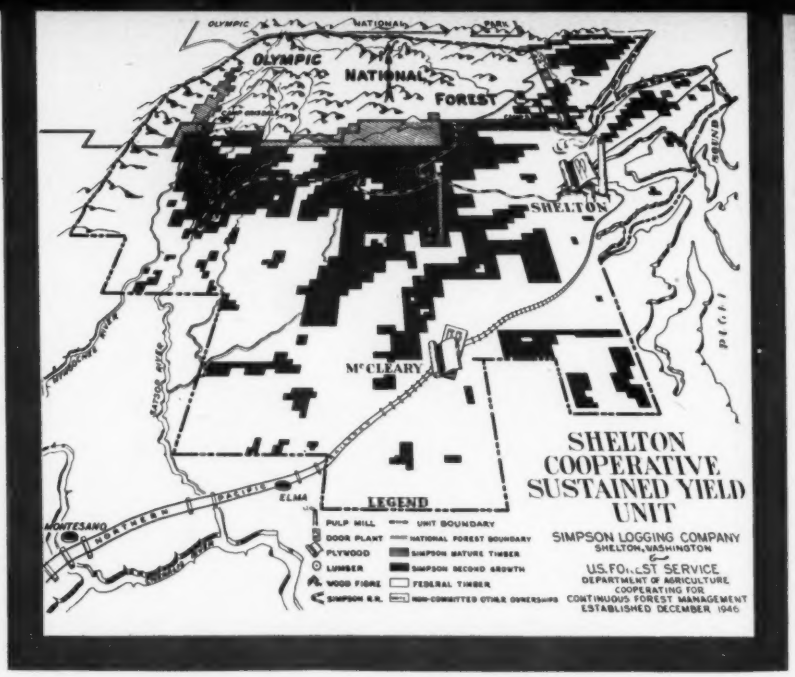
The tree farms hearing was an inspiring community gathering. The occasion was of great importance in the outlook of the examining committee of the Industrial Forestry Association, certifying agency of West Coast Tree Farms. Its members were eminent foresters E. T. Clark, W. B. Greeley, Clyde Martin and George L. Drake. They, like the Kiwanis

The Shelton Cooperative Sustained Yield Unit of Mason and Eastern Grays Harbor Counties in Washington is a milestone on the road to better government-company-community relations

Club members and other Sheltonians, saw this spread of the tree farms movement among the 550 freeholders of tree land in Mason County as a vital new force of promise for the region's future.

Hundreds more had their sights fixed on the values of tree farm management in neighboring Grays Harbor and Thurston Counties. Something big and new was being added to the green vistas of the Simpson Lookout. The people themselves were moving into the picture.

The sweep of the main scene, the big wheel of this forestry movement, is officially known as The Shelton Cooperative Sustained Yield Unit of Mason and Eastern Grays Harbor Counties in Washington. In practical terms this is an agreement between the Simpson Logging Company and the U. S. Forest Service to pool timber in a working circle of



Applicants for tree farm certificates and Board of Directors Committee of Industrial Forestry Association, certifying agency of West Coast Tree Farms, at Kiwanis Club meeting in Shelton in December of 1953

government-owned and privately-owned Douglasfir forest land. The agreement took effect January 1, 1947, and was well described in the February, 1947, issue of AMERICAN FORESTS, by W. B. Greeley. Its purpose, he emphasized, was to make the maximum use of the lands in the unit, so as to stabilize the forest communities that were dependent on the wise use of all these lands for their economic life.

The agreement was made under the authority of U. S. Public Law 273, dated March 29, 1944. It followed the U. S. Department af Agriculture policy that had ruled the national forests since February 1, 1905 for local benefit through the "dominant industry." It stated, "This agreement shall . . . be binding upon the parties hereto, their successors and assigns, until December 31, 2046."

In the Shelton case the people of Mason and Eastern Grays Harbor Counties were assured that 111,000 acres of the Olympic National Forest within these counties and 173,000 acres of adjoining private land would be converted into payrolls, taxes, transportation and business revenue at home. The Simpson Logging Company had provided the principal payroll of the Shelton area since 1888. It was operating two sawmills and a plywood plant in the Shelton (pop. 5040) of 1947. In 1942 the company had rescued the neighboring Eastern Grays Harbor County town of McCleary from extinction by purchase of the plywood and door factories there. Shelton, McCleary, Elma, and other communities within the Shelton "working circle," have new homes, schools, churches, stores, and new money in the banks. New logging and lumbering enterprises are flourishing. And now — the new tree farms.

This tree farms potential looms in the future beside the 176,000 acres of the South Olympic Tree Farm, even as state-ruled forests stand beside the Olympic National Forest in the tri-county territory of the Shelton-McCleary mills.

The 1951 Forest Survey shows 348,020 acres of private forest land in Mason County, more than half of it outside the Cooperative Sustained Yield Unit, in freeholds large and small. There are 59,530 acres of school and related lands under the jurisdiction of the Washington State Forest Board. The Capitol State Forest of 80,000 acres in Thurston and Grays Harbor Counties, with the last gap in its reforestation to be planted in 1954, is in the economic picture. So are some 4500 acres of Indian timber and as many more acres in municipal ownership.

In March, 1953, 72 timbered acres of the Liegel Brothers' 140-acre farm

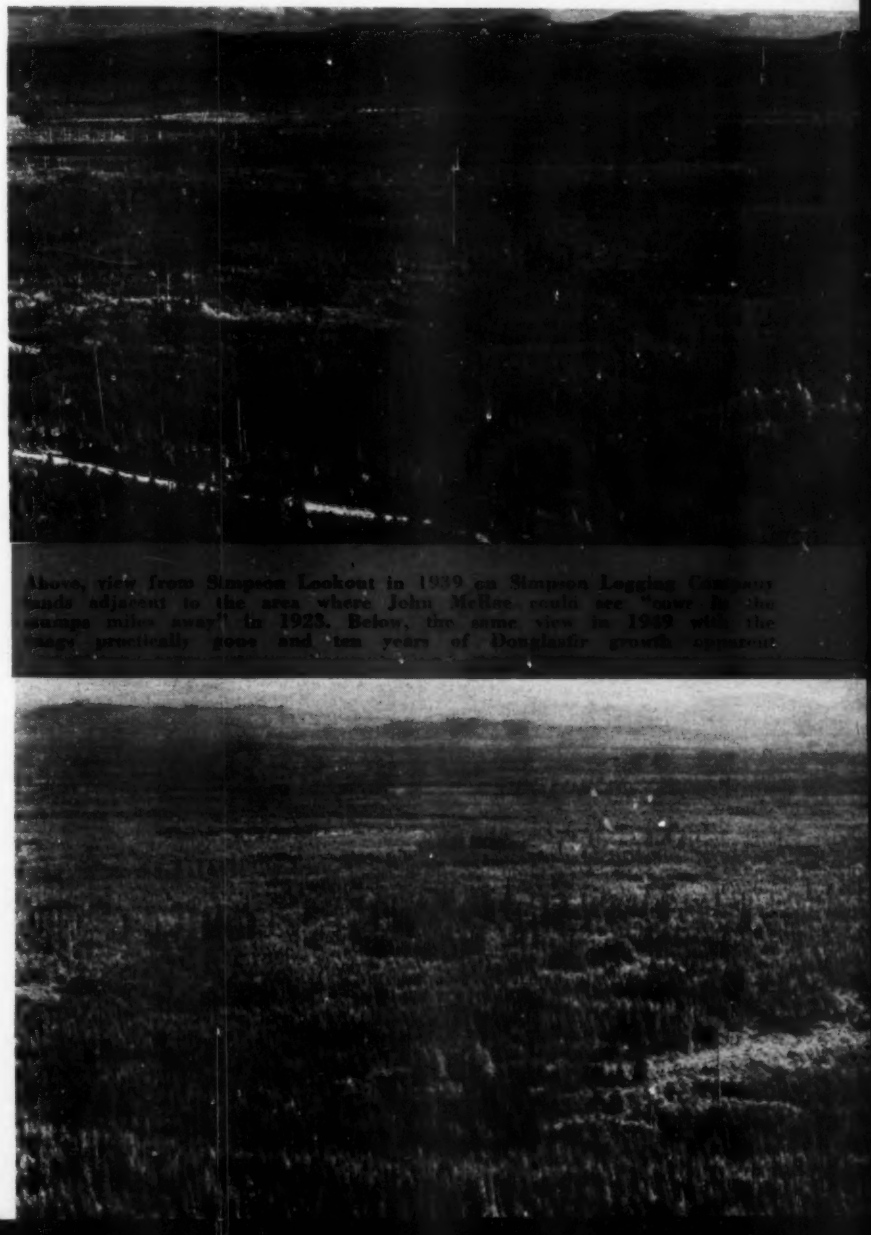
near Shelton were awarded a tree farm certificate. Jack Liegel, 71, reported that he and his brother, Joe, 63, had lived on their place since 1913, "but it was only a few years ago that we woke up to the fact that there is cash value in trees." Oscar Levin, Managing Forester of the South Olympic Tree Farm — in which the Weyerhaeuser Timber Company and other owners are cooperators with Simpson Logging Company—gave the Liegels counsel and help on the ground. So did Mason County Agricultural Agent Andrew Kruiswyk. After careful estimates it was decided that 280,000 board feet could safely be cut from the 72 acres over a ten-year period. The Liegels began with salvage and thinning operations. Jack Liegel attended the December Kiwanis Club tree farm meeting as an enthusiast in the movement.

Many of these forest freeholds hark back to the pioneers. The land of the Liegels was first logged in 1890, by bull teams. It was cutover again in 1910. Another new tree farm that is owned by a team of brothers, John and Henry Mommsen, has one of the finest young forests in the state near McCleary. Their father filed on 160 acres of public domain timber there in 1878, later bought 540 more acres of cutover land. Two years later a lightning fire killed the big timber. The brothers, as they grew, watched the young Douglasfirs grow in the snags. Today the new forest is a show place of eastern Grays Harbor County. A thinning operation example from half an acre brought $87 for 1350 board feet of young-growth peeler logs and $92 for 2550 feet of sawlogs —or a total return of $179 for a piece of good forest practice. The harvesting plan on the Mommsen Brothers Tree Farm is for 2,000,000 board feet of selectively cut timber per year from today's 700 tree farm acres. They have refused an offer of $70,000 for the stumpage alone.

Warren Winslow and his wife own a 220-acre West Coast Tree Farm on the McCleary-Olympia Highway, in Thurston County. He is 30, a Navy combat veteran of World War II, and keeps busy as a logging contractor with a 12-man crew. His father, who has farmed and logged in the area since 1890, has recently applied for a tree-farm certificate. On his three tracts Warren Winslow has thinned out the young growth, cut down snags and otherwise reduced the fire hazard and put protection practices into effect. On one 80-acre tract the annual growth is now 1000 board feet per acre. He is an active promoter of the tree farms program among other tri-county forest and logging freeholders.

Far to the north, at Tahuya on Hood Canal, Mason County, Harvey Rendsland's father bought 160 acres of cutover in 1890. Its logging history looked back to 1876. Today the quarter-section bears a stand of Douglasfirs with many trees that have diameters of from 20 to 30 inches. In 1924 Harvey Rendsland and his wife, Ranka, bought 165 acres that had been logged with oxen in 1894, with numbers of the old-growth trees left. They were harvested in 1928. The young growth was carefully saved. Its trees now average 24 inches in diameter. The Rendslands have a third tract of 320 acres, which was originally logged in 1890. All of these tracts are now in the Rendsland Tree Farm. Harvey Rendsland is also a contract logger who preaches the tree farm gospel to all private owners.

Werner and Marzell Mayr had 1200 acres certified as the Mayr Brothers Tree Farm in 1949. It is located down the Wishkah watershed from the western tip of South Olympic Tree Farm, and the market outlet is in Grays Harbor. However, Werner Mayr has been, and is, an active tree farm missionary to Mason and Thurston County freeholders



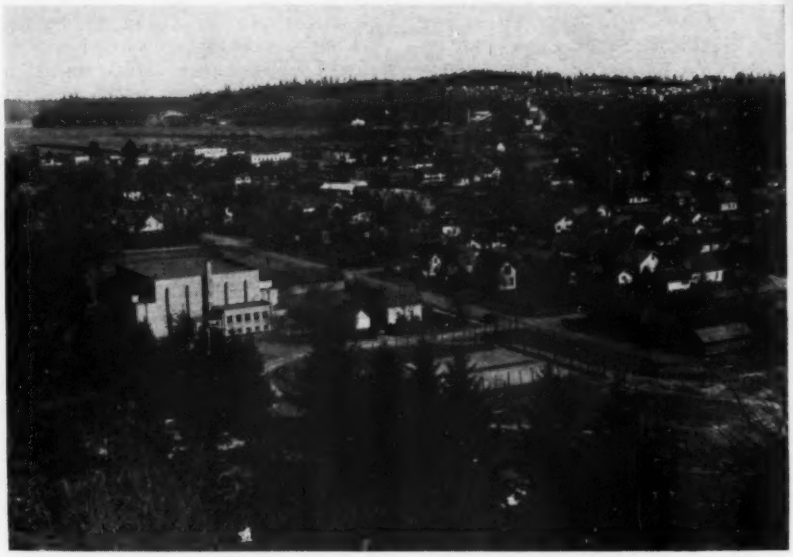
Above, view from Simpson Lookout in 1939 on Simpson Logging Company lands adjacent to the area where John McRae could see "over to the stumps miles away" in 1923. Below, the same view in 1949 with the stags practically gone and ten years of Douglasfir growth apparent.

and small loggers. On December 4 last year he led a meeting of a free-hold group that included Harvey Rendsland and Warren Winslow, with ten newspaper men of the three counties. In his keynote talk, Mayr said:

"Good tree farming is profitable. How can we educate the smaller timber owners into practicing good works on their lands? First, basically, a sound, reasonable property tax on growing lands. Bend all effort toward new wood uses, so that the tree farmer can utilize his small pulp trees down to two-inch diameters by 56 inches long. Also use must be found for small alder and maple down to similar sizes. . . . If a man owns a stand of 50-year-old Douglas-fir, half of which is merchantable, he has the right as owner to take out the merchantable half even if in the logging the unmerchantable half is destroyed. This right cannot and should not be taken from him. We must sell him with the idea to preserve younger unmerchantable trees that they may reach maturity and bring him still additional income, and thereby favorably affect the economy of his community."

So goes the thinking of self-made, self-educated Logger-Tree-Farmer Werner Mayr of the Wishkah. It is this kind of thinking and talking that is having a tremendous influence with the 500 forest freeholders of Mason County, the 1000 of Grays Harbor County, and the 2000 of Thurston County. In the Shelton-McCleary areas there were nine certified tree farmers, then came December 15, and there were 24.

Harry Robbins, old-time head of



Shelton, Washington. This is the site of the Simpson Logging Company's operations and the center of activities and home life of logging families who live in this area of the sustained yield unit

Block logging on the Simpson Logging Company's holdings in the Upper Wynooche Valley

Loop Field grandstand of Shelton Schools is jammed two nights every May for "The Magic Tree," outdoor pageant in which 500 students take part as a contribution to the annual Mason County Forest Festival, popular spring event

the Hamma Hamma Logging Company of Mason County, held fast to 3500 acres of young growth in his stumps, and it is now the Hamma Hamma Tree Farm. Oscar Levin, manager of the great South Olympic Tree Farm, has his own certified tree farm freehold of 40 acres. Rudie Werberger, veteran vintner of Mason County and guiding genius of the Mason County Forest Festival — 1954 will be its tenth year — has an 80-acre tree farm. Mason County School Superintendent J. W. (Bill) Goodpaster owns 500 acres that are well stocked with Douglasfirs from 10 to 30 years old. Warren Williams is a logger who has a tree-farm management plan at work on his 98 acres. Raymond W. Scott is a sawmill man with 37 acres of young Douglasfir.

Each name has a story of pioneer logging, of fire on the land, of efforts to clear, graze and cultivate, then of the triumph of the trees on some part of the property, with the owner's eventual realization of the values of the forest crop. In most cases the freeholders have gone beyond the basic tree farm requirements for growing and protecting trees, for harvesting plans and for inspection service by Industrial Forestry Association foresters.

The 15 applications considered by the committee of eminent foresters at Shelton in December were all approved, with reservations on but one. Greeley, Drake and Martin, each a past president of the Society of American Foresters, had taken part in last June's Chicago conference on the national small forest problem. Early in December the Western Forestry and Conservation Association had held its annual conference in Seattle, on "Small Forest Holdings." The question before the house at all of these affairs, including the Kiwanis Club meeting at Shelton, was, "How can American forestry meet the expanding need of educating the small owner on the value of tree farm practices and how to apply them?" The answer lies with such natural local leaders as Werner Mayr and John McRae.

The Grays Harbor-Mason-Thurston Counties area has been a proving ground for many new ideas in forestry progress. The start of the Keep Green movement was with the American Legion post at Shelton in 1939, in a program called the Junior Forest Council. Clemons Tree Farm, in Grays Harbor County, led forth on another national private forestry program in 1941. The Kirk Company of Mason County has pioneered in Christmas tree culture on a 25,000-acre tree farm, harvesting a million trees each Christmas season. Spectacular features of the transition from a pioneering sawlog economy to one using small wood pieces and fibers are in the modern Grays Harbor furniture industry and the vast tree farms of Rayonier, Inc., supplying mills at Hoquiam and Shelton.

Lady logger on Skokomish Indian Reservation seems to enjoy work in woods

Now the Olympic National Forest has a second sustained-yield unit that is reserved to Grays Harbor industries. Lying like a black shadow over all this change, growth and hope for the future of thousands of families, is the stagnation and decay of 18,000,000,000 board feet of trackless timber in poverty-stricken Olympic National Park — timber taken from Olympic National Forest.

There are many issues on the forests and their use in the three counties. The Park timber is the biggest and toughest. Another one is about bear damage to young Douglasfirs. A tough one is piracy of Christmas trees, Cascara bark and other "minor forest products." There are the relatively small percentage of those who call themselves sportsmen and who claim the right to hunt and fish in season on anybody's land, but abuse the privilege by being careless with fire or otherwise inconsiderate of the owner. Like that—and much more.

The Shelton Cooperative Sustained Yield Unit also has national interest — as an experiment in industry and government forest resource cooperation. There has been no great change in its makeup and program since Col. Greeley described it in AMERICAN FORESTS seven years ago. The Simpson Logging Company has added acreage to the pool. Harvesting has proceeded according to plan. The returns from salvage logging have exceeded early expectations. The Simpson Woodfiber plant at Shelton began to turn out insulating board in March, 1947, and has found building industry markets for other fiber products that spell closer utilization in the timber. Small forest and sawmill enterprise has flourished all over the land. McCleary lives again. Elma has new life. Shelton has been wonderfully beautified.

In the whole working circle of forest-sustained human society in the three counties the sustained-yield agreement has a large place and a strong part, but only a place and a part. The people of the land are the main force needed to make the working circle work. "Timber Serves All" has been the advertising slogan of the Simpson Logging Company in the newspapers of Mason and Grays Harbor Counties since 1942.

"The Simpson Lookout" is also a living symbol to the people of the area. It was a pioneer lookout for forest fires in Mason County first of all. Then the old familiar name was given to the company's family magazine.

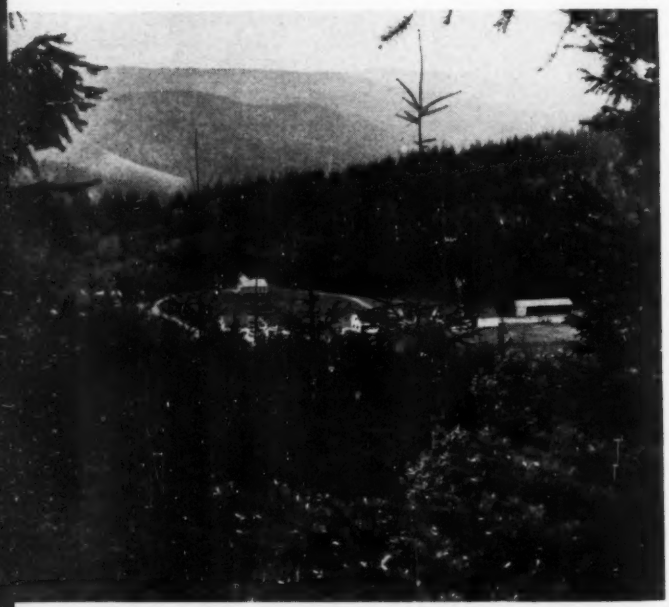
"The panorama from Simpson Lookout is a vast expanse of young timber that challenges the best forests of Europe in sheer productiveness."

So Col. Greeley wrote in 1947. Stewart Holbrook has described the same view as "a sight to cheer the bleakest soul." That it is, on any day when the clouds are standing high, wide and handsome, with sunlight pouring between them on tens of thousands of acres, solidly green. On Simpson Lookout the forest statistician will remind the poet that for four years State Division of Forestry records have shown less than 27 acres burned over in Mason County each year. And that the 1951 Forest Survey shows but 5000 acres of "nonstocked areas," in contrast to 147,000 acres in 1932. At the same time the "seedlings and saplings" class has increased from 100,000 acres to 138,000 acres, and "pole timber" from 68,000 acres to 214,000 acres.

A large share of this acreage of seedlings, saplings and pole timber is part of the Simpson Logging Compony's pool in the cooperative sustained-yield unit. But other ownerships are in there too — the state-owned forests, Indian lands, and hundreds of freeholders, the new tree farms of John McRae, Bill Goodpaster and others.

It all comes back to the people. The people do rule. They hold the jobs. Out over the nation the people buy the products on which payrolls and business and taxes at Shelton depend. The people it is who make the Mason County Forest Festival a rousing success each year. No other power can do it. And at last the people are coming into the tree farms movement, out there under the Simpson Lookout. Make way!

View of the Capitol State Forest and Nursery on lands that were logged by the Mason County Logging Company. This area has now been restocked and the forest that can be seen surrounding clearing is mostly pole timber size Douglasfir



Conservation of water, power, forest and scenic values are all in this picture. Tacoma City Light's project in center, Olympic National Park in background, Olympic National Forest below peaks, and South Olympic Tree Farm in foreground

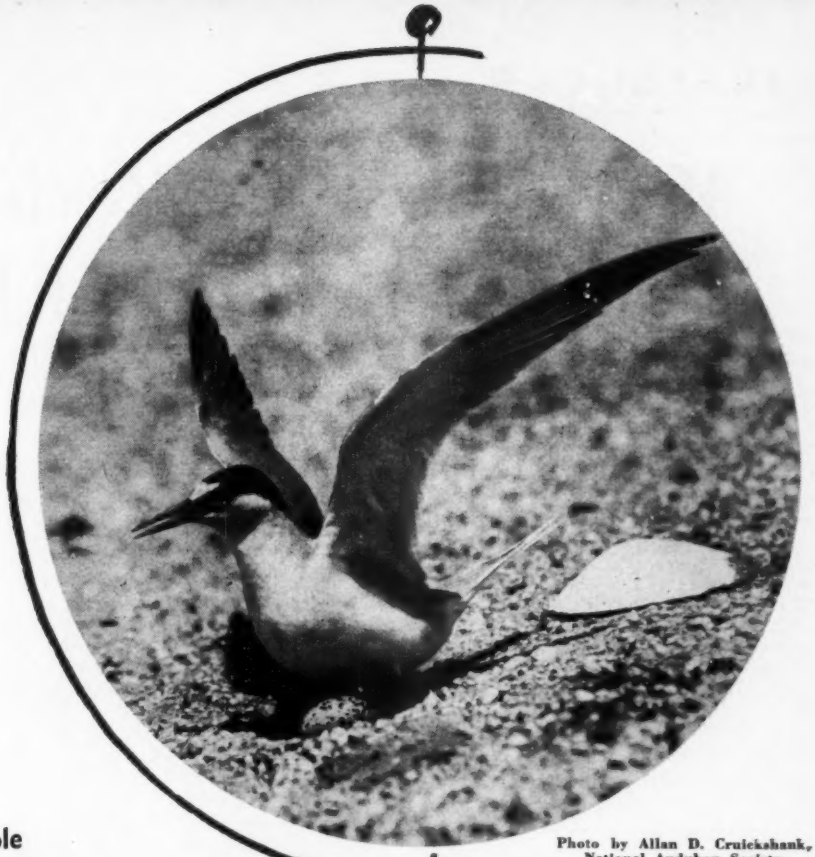


Photo by Allan D. Cruickshank, National Audubon Society

The tern, a high flying pole to pole commuter, has no peers as a gadabout

By DUANE VALENTRY

World's Greatest Traveler

HIS itinerary would exhaust the most energetic human on earth, yet he seems to thrive on it. Flying from the North Pole to the South Pole each year, braving icy winds and terrifying storms, the Arctic tern deserves his title of the greatest traveler in the world.

Soaring high above regions shining glassily with ice and snow, the trackless miles below must give him little hint as to where he is, yet he never gets lost. He carries no maps in his pocket and has no compass but year in and year out he arrives unfailingly at the far destination he has set himself.

He's a bird with two suits, and he needs them. His handsome checkered plumage is a warm overcoat when the bitter winds blow. But he's a different creature, lighter in color and weight, when he settles down for a prolonged stay under tropic sunshine.

Millions of birds migrate yearly and some, like the golden plover, fly immense distances nonstop. But the Arctic tern breaks all the records. His yearly flight from the Arctic to the Antarctic puts this small shore bird at the top of the list. Of all creatures on earth, he seems to have the biggest allotment of gypsy blood.

A non-game bird, our traveler belongs to the huge gull family, and there are some 75 known species of tern, from the two-foot-long Caspian tern measuring four and a half feet across his wings to the dainty "least" tern, only nine inches long. His kind is abundant on the coasts of the whole Northern Hemisphere and of Africa. In fact, he's found in most parts of the world, and no wonder. Wherever you see him he's probably just touched terra firma and is about to take off for another spot a few thousand miles away on the other side of the globe, where he'll show himself just for the record and again be off!

Usually white beneath, blue gray above and black on the crown, terns are also sometimes pure white, sometimes black and white or sooty brown. You may even glimpse one almost completely black. They breed locally on the coasts and in the Mississippi Valley and from the Gulf states to Greenland.

Life isn't all sunshine and travel for this hardy fellow, however. He's subject to almost incessant persecution from man for one reason or

(*Turn to page* 52)

The Chief's Report

McArdle's 1953 Review Stresses Grazing on National Forests

ANNOUNCEMENT of a policy change to give grazing permittees greater assurance that they will receive the benefit from range improvements on national forests which they themselves finance is a highlight of the annual report for 1953 issued recently by Richard E. McArdle, chief of the U. S. Forest Service.

Under the new policy, Chief McArdle explains, increased grazing capacity resulting from reseeding or other range improvement work at the permittee's expense will be available for use by the permittee or permittees making the investment provided the improvements (1) are approved in advance under either a special-use permit or cooperative agreement; (2) do not conflict with other uses of the national forests; (3) are beneficial to the range; and (4) continue to be effective.

The change in administrative policy also provides that use of the increased grazing capacity may consist of (1) increased forage for existing permitted numbers of animals where the present supply is inadequate, or (2) increase in permitted animals or animal-months after range conservation needs are fully met. Where an increase in permitted number is allowed, such increase will be recognized as being of the same status and subject to the same policies that apply to other grazing preferences, according to Mr. McArdle.

Chief Forester Richard E. McArdle

The report also explains proposals made this year by the Forest Service to modify the policy of making adjustments in larger permits to give increases to small permittees or to admit new ones. Because the West has become more stabilized, there is less need for such redistribution. (The changes became effective December 18, 1953, after the report was written.) Mr. McArdle says, however, that because national forests are public property, the government in order to carry out its responsibility decides who is privileged to use that property.

Another policy revision mentioned in the report (and approved December 18) provides that reductions in use will be made if and when needed without relation to the transfer of grazing privileges from one person to another, usually when a stockman sells his ranch property or permitted livestock. The Forest Service does not automatically reduce the number of permitted livestock or the length of the grazing season each time the grazing privilege is transferred. Between 1948 and 1952 about six percent of all permits were involved in transfer cases and reductions were made in 44 percent of these, or an average of 467 cases a year. Only three of these cases, however, were for distribution of grazing privileges and only 28 cattle were involved. All the rest of the reductions were for protection of the range resource.

In his report Mr. McArdle said that during the past 32 years out of 85,000 decisions affecting numbers of livestock or season of use about 1.4 percent were appealed and the appellant was sustained in whole or in part in 22 percent of the cases. Of the appeals, 1195 were made from the decisions of rangers to forest supervisors, 973 from forest supervisors to regional foresters, 303 from regional foresters to the Chief of the Forest Service, and 83 from the Chief to the Secretary of Agriculture.

A large part of Chief McArdle's discussion of the vast natural resources under his direction is de-

Policy changes to give permittees benefits from self-financed range improvements, provisions for use of increased grazing capacity are listed as highlights of U. S. Forest Service's activities

voted to the management of the grazing resource because the agricultural economy of the West is inseparably linked with national forest ranges, he explained. They embrace the headwaters of major streams used for irrigation, hydroelectric power, domestic and industrial purposes. They also provide an important part of the summer forage, thereby forming a vital link in the year-round operation of the rancher.

The report also covers the accomplishments of the year in managing the water, timber, recreation and wildlife resources on the national forests. Cash receipts from these and the grazing resources of the national forests reached an all-time high of $76 million, exceeding operating and capital expenditures by nearly $12 million.

The report also stated that in addition to the increase in cash receipts there was an estimated increase of more than $70,000,000 in the value of capital assets of the national forests. This estimate is based on increases in stumpage values and annual timber growth.

The report states further: "The greatest public values of the national forests, of course, are those that cannot be readily expressed in monetary terms. The value of such benefits as reduction of floods, assurance of dependable water supplies, contributions to community stability, and outdoor recreation for millions of people, is indeed beyond reckoning. Yet the substantial cash income of the national forests more than covers the cost of obtaining these benefits."

Public use of the national forests for recreation, according to the report, again reached an all-time high in 1952, with 33 million visits reported. This was a 10 percent increase over the previous year. It was 83 percent greater than in 1941, the year of highest prewar use.

The report listed 42 percent of the visitors as using the camp and picnic ground facilities. Fishing, hunting, skiing, hiking, and riding were other popular recreational activities. "The national forests provide the most widely used public properties in the United States for those seeking these outdoor, forest-type recreation activities," the report said.

The report describes highlights of the cooperative programs carried on through the states and with private-land owners, designed to encourage and facilitate more good forest practices on private lands. It also covers research activities conducted by the Forest Service, most of them in cooperation with the State agricultural experiment stations, forest schools, and forest industries.

In further elaborating on national forest ranges, Mr. McArdle reports that about 4.1 million cattle and sheep graze western national forests under paid permit. These are owned by some 20,000 permittees who paid fees in 1953 totaling $4.4 million.

The total cumulative value of investments by the federal government in range improvements totals about $3.5 million for reseeding and another $16 million for fence building, development of water places, stock driveways and other improvements. This is part of a departmental policy of improving the ranges to achieve desirable watershed conditions and sustained high-level production of forage.

In addition, grazing permittees during the past ten years have spent some $2.3 million for such range improvements and for re-vegetation. Other private contributions worth about $650,000 annually have been made in materials and labor.

The Forest Service depends on Department of Agriculture research for improved aids and guides to range management, revegetation, and noxious-weed control. Research findings are always subjected to pilot testing prior to wide-scale application to determine their practicability. Much research information developed by the Forest Service is being used by other land-administering agencies as well as by stockmen on private ranges, the report said.

Sheep grazing the Gallatin National Forest in Montana. Some 20,000 permittees annually graze 4.1 cattle and sheep on national forests, Chief McArdle reports

How the

IT recently occurred to me that there are several million people in this country who never knew, and many others who have forgotten, the CCC — the Civilian Conservation Corps. Not only that, but they have never known, or do not remember, economic stresses such as those of which the CCC was born.

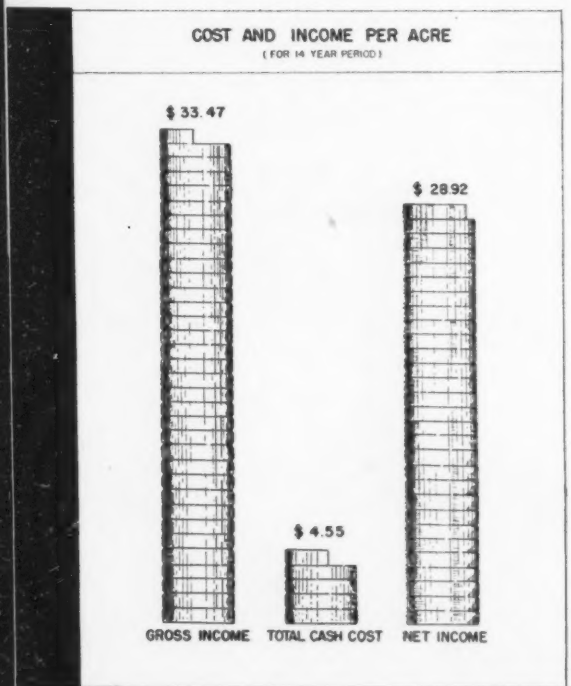
Yet, the work done by the CCC is worth millions of dollars today. As a result of it, landowners are "clipping coupons" and the nation is reaping many other benefits not generally appreciated. The CCC's tree planting alone has given thousands of landowners a better understanding of the privilege, dignity, and power of private ownership. I wonder how many of us who do remember those trying times of the 1930's remember them well enough to invest in greater security for the future.

For those who never knew and for those who have forgotten a part of the lesson of the 1930's, let's briefly review the why of the CCC.

Following the stock market crash in 1929 came the depression of the 1930's. Farmers were plowing more land to grow more crops so they could plow the land again. This was another vicious cycle like the one that involved plantation owners of the old South a hundred years before. They bought more Negroes to plant more cotton to buy more Negroes. Both actions were taken in desperation — for self-preservation.

Not only were most of the nation's farmers reduced to a status of marginal and submarginal operators in the 1930's, but many of them left the farms. The non-farm laborers, the white-collar groups and many others were out of jobs. Soup lines, bread lines, and job-hunters' lines were the order of the day in towns and cities throughout the country. The unemployed march on Washington was made by thousands of men seeking help from the government.

According to the score board, we were behind and the clock was running down. We still had the ball, but we were backed up against our own



Thinnings returned 12 percent annually on landowner's $17 an acre investment—land value at time of planting

CCC has paid off

goal line. We had failed to gain through the middle of the line and the crowd was yelling for action. A new team was sent on the field with instructions to improvise and use some new plays. One of the improvisations was the CCC — which some thought was a wide sweep around left end — but it made yardage and the crowds cheered. What was the play and what about the yardage gained?

The CCC was made up of able-bodied young men who preferred doing useful work to standing in bread lines. A few of the camps were especially for veterans of World War I. These men came from all sections of the country and represented all social, racial, and religious groups. The Corps was composed of 200-man units in camps which were located in work areas scattered across the nation. These camps were under administrative supervision of the Army. The field work they did was under the direction of the agency to which the individual camp was assigned.

Most of the CCC camps were assigned to federal and state conservation agencies such as the U. S. Soil Conservation Service, U. S. Forest Service, U. S. National Park Service, State Departments of Forestry, Parks, Fish and Game, and others. A majority of the camps worked on

By T. B. PLAIR

public lands, but some — among them, those assigned to the Soil Conservation Service — worked on privately-owned lands.

Camps assigned to the SCS worked on soil conservation projects located in every state in the Union. They helped landowners install soil-erosion-control and water-conservation measures to demonstrate proper land use and soil management. Their jobs were many and quite varied in character, depending on where the camps were located. Tree planting was almost universal, even in the semi-desert areas of the Southwest where windbreaks are necessary adjuncts to conservation farming of clean-tilled crops.

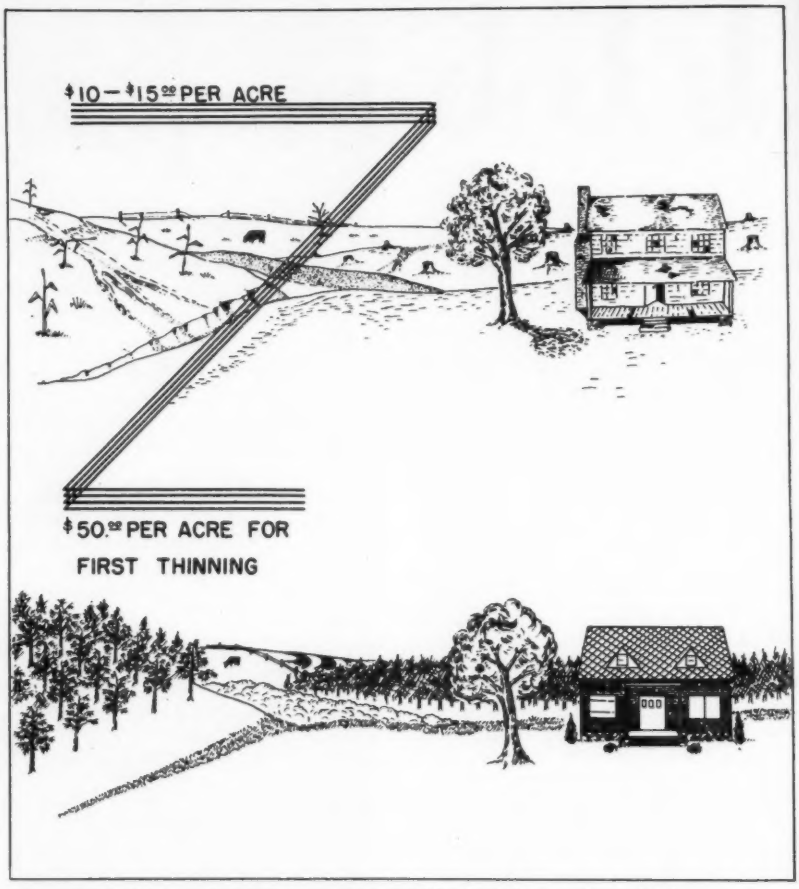
Pierce Hill, Saluda, S. C., thinning CCC-planted pine for pulp. Mr. Hill grew cotton crops on this same field 24 years earlier

Trees were planted principally on lands that should not have been cultivated — or at least where annual cultivation could not continue if soil was to be saved. There were millions of acres of that kind of land, which needed to be returned to a safe, and in most cases, a productive use. The biggest hurdle was to cause the landowner to appreciate the wisdom of taking his land out of cotton, corn, or some other equally erosion-inducing crop and planting it to trees. Many of the landowners could remember the hard work that they or their fathers had done to clear land, and were not interested in having more of the same "worthless brush" growing there again. Even so, some did see a potential value in trees and others had nothing more to lose anyway.

For some of us, it was only yesterday that we were hauling truckloads of tree seedlings to "worn out" fields for hundreds of CCC boys to plant. We can recall quite vividly the enthusiasm of many of the boys for planting trees — doing a job for the future. Of course there were those who were not interested — they planted them upside down or stuck a bundle in a hollow log, or threw them in a ditch — but they were few in number. Most people like to see things grow. Even though it seems like yesterday, yet it was almost 20 years ago that the CCC started planting trees.

Now what does all this tree planting mean to us today? What has it taught us? What did we buy? Was the CCC a wide left-end run, or was it just a slant off left tackle? What does the score board show today?

The experiences gained in tree planting during the CCC days have given us improved technologies that would otherwise have taken generations to acquire. For example, we learned how to produce better nursery stock faster and cheaper; how to prepare land for tree planting; and how to plant the trees better. Perhaps most important, we learned that trees have specific site requirements for their best growth — especially requirements of climate and soils.



Typical "case history" shows how CCC-planted trees brought barren farm land valued at $10 to $15 per acre back into productivity

There is still a lot to learn about the specific soil requirements for the best growth of our different commercial tree species. We now know that some of our land is unsuited to annually cultivated or row crops but it may grow good tree crops. We also know that not all poor grass land is good tree land. So the solution during the early days of the CCC — "if the land is no good for grass, plant trees on it" — is not a satisfactory answer to the problem of using land according to its capabilities for tree crops.

During the past couple of years, frequent and widespread reports indicated that many of the pine plantations made in the Southeastern states by the CCC were being thinned. That was not too much to believe, but the reports further indicated that landowners were getting a nice return from the sale of their thinnings. At that point the skeptics appeared. They said: "There must be a mistake;" "The trees are not big enough yet;" "No one would pay for that small stuff;" and other things. All added up to the fact that we did not know what was happening.

It was time to do a little stock-taking — really find out if many plantations were being thinned; if

(*Turn to page* 44)

Fourteen-year-old slash pine thinned for pulp. The CCC planted this pine stand on the farm of T. H. Pfeils, Coweta County, Ga.

. . . Tree Names

By R. R. FENSKA

WHEN Jacques Cartier explored the St. Lawrence River region in the early 16th century his crew became ill with scurvy one winter and 25 of his men died. A friendly Indian visited his camp one day and seeing the condition of the remaining crew went to Cartier and told him he would make his men well. The Indian went into the woods and came back with an armful of evergreen branches. From the leaves he made a "tea" which he asked the men to drink. To the surprise of Cartier and his decimated crew the men all recovered. When Cartier returned to France he showed them small trees from which the "tea" had been made which saved the lives of his remaining crew. They asked him what the name of this tree was and he replied, "Arborvitae," which in French means "Tree of Life." The French immediately adopted this name for the tree and it has been known as such ever since. However, the lumbermen also call it northern white cedar because the wood somewhat resembles that of the cedars.

Seed from the eastern white pine was taken back to England during Colonial days and planted near Weymouth, England. To this day it is still known there as the Weymouth pine.

Take one more example, our native Douglasfir. This was named in honor of David Douglas, a Scotch botanist, sent out by the Royal Horticultural Society to study this tree. For many years it was also known as Douglas spruce and Oregon pine. Yet it is not a spruce, a pine, or a fir. It is a distinct genus of its own which none of the common names indicates.

The reader will thus see how confusing it is to call trees by their common names and expect everyone to know what tree they are talking about.

It wasn't until the famous Swedish botanist, Linnaeus, developed his system of nomenclature for all plant life that we had a satisfactory scientific basis for plant names. The Bible says, "Ye Shall Know Them By Their Fruits." That was what Linnaeus used as his basis (fruit and flower) for classifying trees. He also decided to use the binomial system, or double name used by persons (John Jones, Richard Roe, etc.). For example, take arborvitae. He grouped all trees with the same kind of a cone and flower in a class which he called "Thuja." Then to distinguish one Thuja from all the others he gave each an individual name; in this case "occidentalis." This name, "Thuja occidentalis," is the botanical, or scientific name of this particular tree the world over. Its common name may vary from one country to another, but its scientific name is the same anywhere it is used or planted. This is one reason why the scientific names of trees are usually in Latin, a dead language which no one can change but any one can identify. They are like the notes in music, the same all over the world.

While several common names for the same tree are confusing each is used locally where the people know what tree is meant. The basis for common names of trees is interesting. Sometimes it is based on the color or character of the wood, (white pine, soft maple), the bark (white birch, red pine), the foliage, (yellow birch, red maple), its location, (swamp oak, river birch) or method of branching (weeping willow), etc.

The confusion in the use of common names for trees is further illustrated by an exotic tree from Japan and rather common in landscape planting in this country, known as "umbrella-pine." It is not a pine in any sense of the true pines. Its botanical name is, "Sciadopitys" and so known to the treemen everywhere. We give a native tree in the western states the common name, "Osage-orange" simply because the fruit somewhat resembles an orange.

Another tree more or less common in eastern United States is the Chinese "Tree-of-Heaven" (Ailanthus). This species will grow in practically any type of soil and environment. In China it is often the only tree that will survive the sterile soil and unfavorable surroundings in a region. So the people have said. "It must have been sent down from Heaven."

This arrant confusion in common names of trees can be traced back to our earliest history. For instance, the hemlock, one of our finest ornamental trees is usually referred to as "the tree" that provided the last drink for Socrates. However, the "hemlock" the Greeks used as a means for eliminating criminals and even philosophers was not the hemlock known by the botanical name "Tsuga," which is our native tree, but a roadside weed, known botanically as "Conium" with a distinctly evil odor.

Occasionally the common and the botanical names of a tree are the same. In other words it hasn't been in common use long enough to acquire any other name than the one the botanists have given it. Such is the case of one of our desirable ever-

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DAMSITES in the Dinosaur?

HEARINGS were in progress last month before the House Committee on Interior and Insular Affairs on three bills that would authorize construction of dams called for in the initial phase of the Bureau of Reclamation's Colorado River Storage Project. The bills are H.R. 4443 introduced by Rep. Wayne N. Aspinall of Colorado; H.R. 4419 by Rep. William A. Dawson, of Utah; and H.R. 4463 by Rep. Douglas R. Stringfellow, also of Utah. The dams proposed under this initial phase are Echo Park in Dinosaur National Monument, Flaming Gorge, Glen Canyon, Navajo and Curecanti. The plan has the endorsement of the Interior Department.

Significant dam in this project is the Echo Park Dam in Dinosaur National Monument. Construction of this unit and one other—Split Mountain also in the monument and scheduled for future authorization—is the cockpit of the controversy. Lines were sharply drawn last month between those who see the measures as setting a serious precedent in future parks and monuments management and those who don't; those who maintain that Echo Park is the key to the success of the entire Colorado storage plan; and those who contend that alternate sites would do just as well.

Both Interior Secretary McKay and Under Secretary Ralph A. Tudor say that the dam would not set any precedent as regards present parks policy. They maintain that the dam is necessary and that no alternate site would be fully satisfactory. On the other hand, General U. S. Grant III, an advisor in the Corps of Engineers for 45 years, contends that the invasion of the monument would set a most serious precedent. Furthermore, alternate sites to Echo Park are available and would prove equally satisfactory, General Grant maintains. His views are endorsed by former Interior Secretary Oscar L. Chapman who contends that "the Echo Park and Split Mountain dams absolutely are not necessary to the success of the Colorado River Storage Project."

In the hope of clarifying this highly controversial issue for the readers of "American Forests," the editors therefore present the following report on the pros and cons in the case and also invite your attention to the editorial on page seven.

◀ Whirlpool Canyon as seen from Harper's Corner in the Dinosaur National Monument

Photo by Philip Hyde

Reverberations from E

Key issue in the whole Colorado River Water Storage Project is a scenic spot near the confluence of the Yampa and Green

By RICHARD A. SQUIRES

EONS ago, when two rambunctious rivers, the Green and the Yampa, ground their way through the slowly rising plateau in eastern Utah and western Colorado, they gave that lonesome area two of its most valuable natural resources. The Green and the Yampa in their relentless battle to reach the sea created scenery with wild abandon and a damsite of unparalleled promise.

To call the scenery spectacular, is to under-describe it. The Green and the Yampa sometimes wind, sometimes roar through stone canyons whose multicolored walls rise near-perpendicularly up to 3000 feet above the river beds. Occasionally, the walls recede and the rivers fan out across quiet meadowlands where the green of the shady cottonwood adds sharp contrast to the reds and the yellows of the rock.

The damsite is equally spectacular. The deep canyons shielded by their high walls from the evaporating rays of the sun can store a maximum of water with a minimum of concrete and cost. The power that this high dam promises is phenomenal. And its construction does not present the sticky problem of uprooting settled communities or flooding existing farm lands.

These two spectacular gifts of the rivers meet at Echo Park, just below the confluence of the Green and the Yampa, three miles east of the Utah border in Colorado, and, what is most important, in the heart of Dinosaur National Monument. This latter fact has produced a battle royal which threatens to completely obscure the vast development program contemplated for the entire upper Colorado River Basin.

The Colorado River system is the last major basin in the United States to remain undeveloped. That it has been developed at all, would surprise its earliest white visitors. In 1857 the lower reaches of the Colorado were explored as far upstream as Black Canyon by an army lieutenant. His considered comment stands as a warning to all forecasters.

"The region is, of course, altogether valueless. It seems intended by nature that the Colorado River along the greater portion of its lone and majestic way shall be forever unvisited and unmolested. Ours was the first, and doubtless will be the last, party of whites to visit this profitless locality." The lieutenant was burying what is now the site of Hoover dam.

Twelve years later, Maj. John Wesley Powell led an expedition down the Green River through the chasms that are now Dinosaur National Monument, and then hundreds of miles farther until he reached the Grand Canyon. His diaries remain—records of physical hardship interspersed with poetic descriptions of the magnificent canyon country he was the first to see. Part of his legacy is the exciting names he has left scattered down the course of the Green as it travels

the Monument—Upper and Lower Disaster Falls, Canyon of Lodore, Whirlpool Canyon and Hell's Half Mile.

The thirsty lands and cities of southern California and Arizona have made a mockery of the lieutenant's prediction. And the growing thirst of Denver, Grand Junction, Salt Lake City and other communities and farms in the Upper Basin is seeking to make the major's description of the Green obsolete.

The project they want to quench their thirst is now before Congress. Contemplated to cost over a billion dollars, it will harness the river, permit water to be diverted across mountains and furnish the power to unlock the treasure chest of one of the richest mineral areas in the world.

One of the first projects recommended for construction is Echo Park Dam. And its construction would make some very definite changes in the appearance and character of one of the least seen, and most talked about, scenic areas in the nation.

Echo Park, Steamboat Rock at left, proposed site of controversial dam

Photo by Philip Hyde

ECHO PARK

The misinformation about the area starts with its name. Dinosaur National Monument was descriptive when the monument was set aside in 1915. It was 80-acres small at that time and these 80 acres included nearly all of the dinosaur quarry which has furnished museums throughout the nation with 22 complete fossils of the prehistoric reptiles. Echo Park Dam and that portion of the monument that would be changed by the proposed dam lie miles upstream from the quarry.

The scenic canyon country involved in the current dispute was not set aside until 1938. A presidential proclamation issued in July of that year increased the size of the monument from its original 80 acres to 209,000 acres. Unfortunately, the proclamation could do nothing about developing the area. To say that monument appropriations kept pace with the increase in its size would be to understate the facts in the extreme.

The present development consists almost entirely of a narrow road to the quarry unit where, in a barracks-like museum, the tourist can see fossil fragments and complete dinosaurs as they appear in pictures taken at distant museums.

Primitive dirt roads edge into other portions of the vast Monument but these are not designed for the family car. Thanks mainly to the diligence of the Bureau of Reclamation's engineers, the site of Echo Park Dam can be reached on wheels, but the road was not intended to open the canyon's beauty to the touring public.

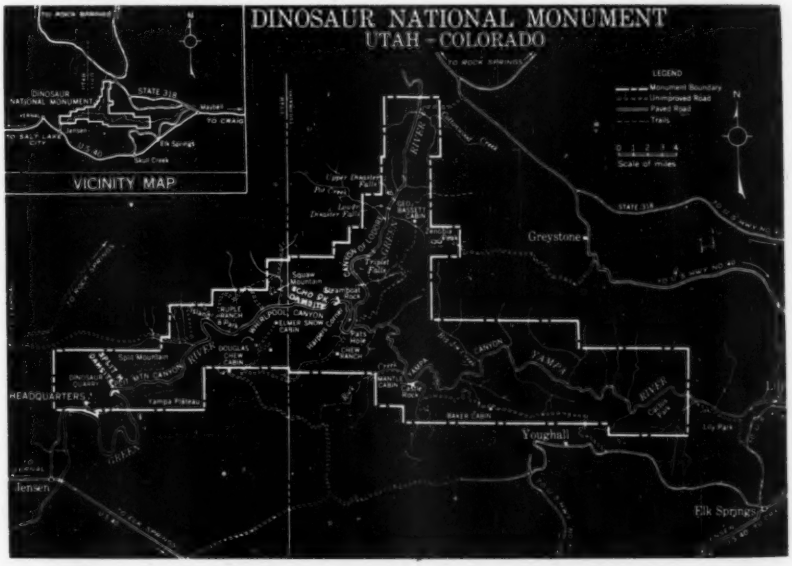
There is wide disagreement between proponents and opponents of the dam as to how much of the area can be opened by highway construction. Certainly roads to impressive canyon overlook points, however expensive, would have great scenic value and a few of the bottom meadowlands along the shores of the two rivers could be reached by blacktop. But, others point out, the area has hundreds of unreachable overlook vistas. After the Green leaves the monument it drops a mile below the surrounding plateau and along with the Colorado winds through the most colorful and least explored wonderland in the United States.

Neither side has recommended that roads be built to the most awe-inspiring part of the monument—the mile after mile of river where the perpendicular walls take the place of a shore. Even if highway construction were physically and financially feasible, no one has suggested that these massive walls should be scarred by a dynamited dugway.

Spokesmen for both sides agree. The best way to see the canyon area of the monument is from the river up. There the agreement stops. Opponents of the dam say that the river must remain in its native state. Proponents argue that without the dam, the entire area will be shut off except for the few.

The two scenic canyons through the monument are vastly different in character—as are the two rivers that made them. Along a great part of its 50-mile journey through the monument, the Yampa is gentle, winding through colorful orange, yellow and light red walls which tower more than a 1000 feet above the stream in many places. Travel down the Yampa, in the hands of a good guide, is not particularly dangerous. The cost of the trip (up to $300 per person), the lack of knowledge of the area and reluctance of many to spend a week sleeping under the stars accounts for the fact that fewer than 2000 persons have traveled its length in the monument. Then again, in dry years such as

AREA EMBRACED BY THE DINOSAUR NATIONAL MONUMENT



1953, the river is often too low to float the rubber rafts, and its low point coincides with the vacation season.

The Green River Canyon through the monument is an entirely different story. Here lies the monument's most imposing gorges. Where the Yampa is delicate, the Green is grand. Where the Yampa murmurs, the Green roars. Fewer than 100 people have survived passage down the length of the Green in the monument, according to the residents of the area, since Maj. Powell made his first voyage in 1869. Major Powell was not given to exaggeration and the names he bequeathed to the Green tell the story.

Against this description and against the actual experiences of those who have "run" the raging waters of the Green through the monument, a leading conservationist and a supporter of a law to prohibit the construction of dams in national monuments testified as follows before a Congressional Committee last March:

"They (proponents of Echo Park Dam) claim that the canyons are available now only to the professionally foolhardy who at great expense will risk their necks running the rivers. Facts are that the canyons can be run now safely and comfortably. Over 100 persons did so this past season, including women and children in rubber rafts, canoes and even fold boats. If the monument is preserved and developed as a great national park, canyon river running can be offered everyone, safely and at reasonable cost . . ."

No allowances for a tendency to emphasize the dangers on the one side and to minimize them on the other can make these two accounts jibe. Obviously, the men are talking about two different parts of the monument.

When it comes to obtaining information about the effect of construction of Echo Park Dam on the monument, the same wide chasm between sides appears.

A spokesman for those opposing the dam testified:

"To claim that flooding will do no damage to the scenery is to portray a singular lack of understanding of what makes the Green and Yampa Canyons fascinating. A study of any section, noting where the water line would be, demonstrates that the lower few hundred feet—the sheer perpendicular walls, overhanging cliffs, occasional ribbon of sandy beach—which provide a major portion of and set the stage for a constantly changing, awe-inspiring vista, will be under water—as much as 550 feet under water."

Those favoring the dam tell a different story.

"The average depth of the reservoirs in the canyons will be 200 feet, hardly enough to detract from the inspiration of walls rising 2000 to 3000 feet high. The rapids which forever close the major part of the canyon to the public would be covered and the entire monument will be opened to visitors in row boat, motor boat or aquaplane. The glory of Lodore Canyon, the flawless beauty of Red Canyon and the sheer walls of the Yampa Gorge will be available to the vacationing public."

Whichever way the decision goes —Echo Park Dam or Echo Park primitive—development or preservation—the wounds will be a long time healing. Dedicated and well-meaning eastern preservationists and writers are being tabbed "scenic carpetbaggers" and "parlor conservationists" by well-meaning residents and writers in the area.

On the other hand, members of conservation groups in other areas are being led to believe that the west is populated by a bunch of latterday Ebenezer Bryces. It was Cattleman Bryce who described the area which is now the national park bearing his name with the words: "Well, it's a hell of a place to lose a cow."

Most of the people of the United States fall somewhere between those who would sacrifice scenery for any expediency and those who would oppose the construction of any reclamation project, however justified, in and national park "on principle."

Looking west from Pat's Hole at a side view of Steamboat Rock. The Yampa River enters on the left, the Green River on the right

Is the Echo Park Dam Necessary?

"No" says Gen. U. S. Grant, Ex-Army Engineer

LIKE the cynics of half a century ago, the dam builders know the price of everything and the value of nothing, General U. S. Grant, III, chairman of the National Capital Park and Planning Association, said last month in commenting on what he described as the new movement to invade Dinosaur National Monument. In accord with any workable plan that will provide more water for western states, General Grant, an officer in the Army Corps of Engineers for 43 years, denied that it will be necessary to invade Dinosaur Monument to get that water. Alternate sites for the proposed Echo Park and Split Mountain dams are available and will serve the purpose just as well, he said. Furthermore, they would be less expensive, he added.

Contrary to propaganda now being distributed in western states that two successive Secretaries of the Interior were for Echo Park Dam, General Grant said that former Secretary Oscar L. Chapman "changed his mind" on the necessity for Echo Park as a result of reviewing alternate plans drawn up by Grant and other engineers. In view of the newest move to push for Echo Park, General Grant said a doubt existed in his mind as to whether Interior has exhausted every avenue to protect the monument under its jurisdiction. A resurvey by some "impartial" agency might now be indicated, he said.

As the situation now stands, General Grant said that the general public might be forgiven for entertaining grave doubts as regards the underlying motives for pressing for the monument invasion. For example, the public might surmise:

1) That the Bureau of Reclamation has wanted to build Echo Park Dam from the first, has had every intention of doing it, and has not made full studies on alternate plans that would save the monument.

2) That the pressure for Echo Park is prompted in part by the desire to develop large blocks of power right from the start of the project that could be sold to industry to help liquidate the project. This in itself might be unsound, General Grant suggested, for once a power market has been developed farmers and other landowners would have to fight that power market to get needed water.

3) That the Bureau of Reclamation wants to get into the national parks and that once a precedent is set similar invasions of Glacier, Yellowstone, Monmouth Caves and other areas would present less formidable obstacles.

Authorization for three of 10 dams proposed in the overall Colorado River Storage Project has been asked by Secretary McKay for the plan's initial phase. These are: Glen Canyon, 13 miles upstream on the Colorado River from Lee's Ferry; Echo Park, on the Green River just below its confluence with the Yampa; and Navajo, part of the San Juan-Chama operation to divert water from the San Juan River through the Continental Divide. Approximately 33,660,000 acre feet of water would be impounded by the three dams. Their power plants would have over one million kilowatts installed capacity. Total cost would be $660,719,000.

One alternate plan, on the other hand, calls for dams in the first phase of the plan at Flaming Gorge, Cross Mountain, Whitewater and Glen Canyon. These four dams, General Grant pointed out, would impound 36,020,000 acre feet of water and their power plants would have 980,000 kilowatts installed capacity. And the total cost of these four dams would be approximately $605,000,000—less than the cost of the Bureau of Reclamation plan.

Much emphasis has been placed by Reclamation on evaporation losses from alternate sites suggested for Echo Park Dam, General Grant said. For comparative purposes, Reclamation's evaporation computations show that losses from the three dams proposed under their plan would be approximately 629,000 acre feet of water a year compared to a 673,000 acre feet loss under the alternate plan. Another computation on evaporation losses made outside the Reclamation Bureau based on the surface areas of the reservoirs and evaporation figures in the Reclamation Bureau's report showed that the difference between the Reclamation plan and the alternate plan would be only 5000 acre feet a year, General Grant said.

General U. S. Grant, III, who defended alternate damsites in a recent interview with *American Forests* editors

Actually, the question of evaporation loss is still somewhat vague at best, General Grant said, with the business of computing reservoir evaporation from pan observations a somewhat inexact science. One difficulty is that no one knows just how much moisture the atmosphere demands from a given expanse of water under different climatic conditions, he said.

The truth is that the evaporation factor is too vague a proposition to constitute a valid argument one way or the other, General Grant declared.

While evaporation losses would doubtless be somewhat greater in dams proposed under the alternate plan, the fact remains that they would impound more water, develop almost as much power and cost less, he declared. And of even greater importance, the necessity for invading one of the nation's national

ALTERNATE SITES EXIST—CHAPMAN

OSCAR L. CHAPMAN, former Secretary of the Interior, jumped into the seething Dinosaur National Monument controversy last month when he told AMERICAN FORESTS that the proposed Echo Park and Split Mountain Dams in the monument "absolutely are not necessary" to assure the success of the Colorado River Storage Project and that alternate sites would prove satisfactory.

Mr. Chapman, who was Secretary of Interior when he gave his tentative approval to the program when it first came to the attention of the public in 1950, said that on the basis of independent studies made for him by Major General U. S. Grant, III he became firmly convinced that alternate available sites would preclude the necessity for invading a national monument.

"Why do they feel that they have to build this particular dam (Echo Park) first?" Mr. Chapman asked in commenting that this would be one in a series of dams to be constructed under the project. "Where are Interior's figures on possible alternate sites? Up to this time, the department has merely stated that no alternate sites would prove fully satisfactory."

Mr. Chapman said that he could sympathize with Secretary McKay and that he knew from experience that no one could fully grasp the task of being Interior Secretary in a few months.

"But they are taking this thing too fast," the former Secretary said. "And I think the department will soon run into trouble with the general public if it permits this matter to become a political proposition for the purpose of helping Senators Watkins and Bennett (Republicans, Utah)."

The controversy over dams in Dinosaur National Monument has been going on for a number of year, Mr. Chapman recalled. The dams were first recommended by former Commissioner of Reclamation Mike Strauss. When the Reclamation Bureau first submitted the plan in 1950 Mr. Chapman submitted the report to the states concerned without his full approval although he tentatively indicated that the two dams in the monument would probably prove necessary.

In commenting on this tentative approval of the project originally, Mr. Chapman said "as a matter of fact I held Reclamation's report in the bottom drawer of my desk for 11 months. I knew from experience how exaggerated Reclamation's reports on such subjects usually were. And that is why I asked General Grant to make his independent study on the matter. His report convinced me that the Echo Park and Split Mountain dams were not necessary and that satisfactory alternate sites could be found."

Consequently, just before leaving office in January a year ago, Mr. Chapman deleted the Echo Park Dam from his report to Congress recommending the other phases of the project.

Mr. Chapman told AMERICAN FORESTS last month that in calling for the authorization of the Echo Park project Interior "is setting a new pattern for future park and monument policy whether it admits it or not.

"In asking for the authorization of this dam in a monument area the Department is conceding a principle and giving away its fight to preserve other park and monument areas," Mr. Chapman said.

"That's why I say the public should be shown figures and facts on the alternate possibilities for the dams proposed in Dinosaur National Monument," Mr. Chapman declared. "The fate of a national monument should not be determined simply by the statement that no satisfactory alternative sites exist and that 'evaporation' factors are against locating alternate dams outside the monument."

monuments—a monument of which Newton B. Drury once said "There is no other place quite like it"—would be eliminated once and for all.

As to the unique quality of the scenery of the Dinosaur National Monument and the importance of preserving it there can be no question, General Grant said. That has been reported on by experts *qualified* to judge scenic and park values. Amazing to him has been the fact that the limited number of people who now visit the Monument has been strangely advanced as indicating its negligibility. This is entirely a matter of accessibility, he said. As soon as the National Park Service can obtain funds to provide facilities, this monument may well rival Yellowstone in popularity, he declared.

"It is inconceivable to me that Congress would, at this time, authorize the cost of this very costly program, if it fully understands to what extent it is still speculative," General Grant said. "The truth of the matter is that this great 10-dam project is being pushed to the limit with a grave doubt existing as to whether there will be enough water to fill all the reservoirs that are planned. Certainly, the substitution of wisdom for Reclamation salesmanship justifies elimination of the two most destructive elements of this plan — the Echo Park and Split Mountain Dams. Indeed, there is every reason to believe that the whole project should be thoroughly reviewed on the basis of facts to be obtained by more thorough field surveys. At a time when economy in government is being stressed and in view of the speculative features of the whole program, a careful second look would appear to be indicated. And once the public is acquainted with the facts, I do not believe it will lightly approve any program that will destroy a national monument and spend millions of dollars in the process on a project that requires further study and analysis."

Finally, General Grant observed that under the 1935 amendment to the Federal Power Act, private industries are prohibited from developing power in parks and monuments. And while the possibility that the government might try to do it was not anticipated when the amendment was passed, "why should the government be permitted to develop power in a park when private enterprise can't?" General Grant asked.

Is the Echo Park Dam Necessary?

"Yes" says Ralph A. Tudor, Interior Undersecretary

CONTROVERSY over construction of the proposed Echo Park Dam in the heart of Dinosaur National Monument in Colorado and Utah boils down to the equation of more water for arid western states versus alteration, not total destruction, of existing monument scenery, in the opinion of Undersecretary of Interior Ralph A. Tudor. A majority of the facts support the case for the dam described as a key link in the program to harness the Colorado, Mr. Tudor thinks. No alternative site would be fully satisfactory, in his judgment. His conclusion is upheld by Interior Secretary McKay. Both officials say the proposal to build the dam in the monument does not set any new pattern in national parks policy.

An engineer who graduated 18th in his class at West Point in 1923, Mr. Tudor was sent West last fall by Secretary McKay to study the overall water project of which Echo Park Dam would be one part. Conceived by the Bureau of Reclamation, the Colorado River Storage Project would reportedly assure delivery of 75 million acre feet of Colorado River water in any consecutive 10-year period. As worked out with the states of Wyoming, Utah, Colorado, New Mexico and Arizona, the plan anticipates irrigation of 380,000 acres of lands, consumptive use of water for industry and municipal purposes, the generation of large blocks of hydroelectric power and other benefits to the five states.

Mr. Tudor's trip, made in the company of the director of the National Park Service and the Commissioner of the Bureau of Reclamation, convinced him that no alternate site for the Echo Park Dam would fill the bill. He reported to Secretary McKay, "I have examined the proposals for various alternate reservoirs. To be effective these alternates must provide approximately the same storage of water and must waste as little water as possible. The latter is extremely important for the available water for consumptive uses in the Upper Colorado River Basin is far less than will be needed for the full economy of the region.

"I have been furnished with information on the New Moab, Dewey and Desolation damsites and have considered the possibility of increasing the height of the proposed Glen Canyon Dam," Mr. Tudor continued. "I am particularly impressed with the showing that any of these alternate dam and reservoir sites would result in a net loss of water from evaporation from approximately 100,000 to 200,000 acre feet per year. Even the lower figure is enough to provide all the water necessary for a city the size of Denver. In an area where water is so precious this is a matter of very serious consequence."

Mr. Tudor said he shared the concern of those who would preserve the beauties of the Dinosaur National Monument in their present natural state but as between a choice of altering this scenery, without destroying it, in a basin which is and will remain rich in scenery, or the irreplaceable loss of enough water to supply all the needs of a city the size of Denver, he believes the conservation of the water in the interest of the nation is of greatest importance.

The Undersecretary said the opposition to two dams in the monument—Echo Park and Split Mountain—"arises from persons and organizations interested in the national parks and their desire to preserve the Dinosaur National Monument in its present natural state. The Echo Park Dam, in particular, will create a large reservoir within this monument and will certainly alter its appearance and the existing conditions." But it is a matter of personal opinion as to the extent of the harm that may be created by the reservoir, he continued. His own feeling is that if the dam is built the beauty of the park will by no means be destroyed.

Asked how Parks Director Conrad L. Wirth voted on the proposal to invade a national monument, Mr. Tudor replied, "He is against it—which is exactly the position I would take were I in his position. However, now that the course is set Mr. Wirth is cooperating in drawing up plans for a $21 million monument improvement program including needed access roads."

Ralph A. Tudor, who told *American Forests* a personal study convinced him Echo Park is the only logical damsite

Asked if the plan to build dams in a monument didn't constitute a serious precedent, both Secretary McKay and Mr. Tudor said this was an exception and that no new pattern was being established as regards park policy. Mr. Tudor also recalled that Former Interior Secretary Champan recommended the project and that a promise was made to study alternate sites for the Echo Park Dam. The new administration inherited this promise, he said.

What were his views on withdrawing the Echo Park reservoir area from the monument rather than building dams in a monument area, Mr. Tudor was asked. The Undersecretary replied that the area should not be withdrawn—that it had many scenic sections. The quarry, containing the dinosaur fossils, for example, will not be disturbed, he said. Also the reservoir water would make the area accessible to more people than previously. A total of 23,209 people visited the monument in 1953.

NO SUBSTITUTE FEASIBLE—PETERSON

(Statement by Elmer G. Peterson, director, Utah Scientific Research Foundation)

THE whole Echo Park Dam-Dinosaur Monument controversy raises an important question as to the values which respectively are here at stake.

We are all, I presume, in varying degrees, lovers of nature, and of the wilderness, and desire to see our country protected from unreasonable exploitation which would seriously injure its geological or other natural interest and attractiveness. In the case of the proposed Echo Park Dam, it seems to me that objection to its construction is very largely invalid. There are immense areas of wild land in the mountain states of the west which have large interest from historical, botanical, geological, and scenic points of view. The small area included in the proposed damsite is almost negligible as you view it flying over the area and lower down where the Green River joins the Colorado River. I know of areas in the Wyoming, Utah and Idaho region and, of course, widely elsewhere in the Rocky Mountain west, which provide nature lovers and wilderness enthusiasts (bless them!) with what may well be called a surfeit of wild country, wildlife, geological history written on the sides of innumerable canyons and gorges, fantastic formation which the erosion of wind and water over the centuries has carved out for us, vast desert stretches with their fascinating flora and fauna and colors in the sky and particularly around the horizon, a hundred miles away some time, which city denizens never see. Of course, the Dinosaur interest is of prime significance in this controversy. It is well to remember in this connection that the proposed Echo Park Dam is 20 miles above the dinosaur quarry. The monument was expanded from 80 acres to more than 200,000 acres by Presidential proclamation a number of years ago (a very questionable authority, many of us believe, without Congressional approval) with the distinct understanding from the National Park Service that the people of Utah, Colorado and Wyoming would never be barred from developing and utilizing the natural resources within their borders, in particular the water and grazing potential.

The construction of the dam and the resulting reservoir will not, in my judgment and in the judgment of others who know the situation accurately, detract from the value of the area as a public park. The canyons are so deep and inaccessible that only a few specially privileged individuals who can indulge a boat ride down the river ever see the canyons. The construction of the dam and the reservoir, conversely, will provide access for the masses, the great roving American public, to visit this interesting area.

The Echo Park Dam is the key structure in the entire Colorado River Storage Project, and will make available to Utah as well as the other states of the Upper Basin needed storage for river regulation and silt control, water for central Utah and power for all Upper Basin states.

Extensive and intensive investigations made by many engineers reveal that any other site or combination of sites will cost 300,000 acre feet of water more than the Echo Park site. This means that enough water to irrigate 100,000 acres of land, according to George D. Clyde, distinguished authority on irrigation, will be lost by evaporation if the Echo Park Dam is not built and any other possible dam substituted for it. This is too high a price to ask the Upper Basin states (and the still undernourished world in spite of local surpluses) to pay, in the face of their present seriously limited water supplies. Without the Echo Park reservoir, Utah will get nothing out of the Colorado River. This storage project must be built as a combination of several units and Echo Park is the key unit. It is, it seems to me, defensible to say that the people of the west deserve the right to benefit by the natural resources, and water is by far the most significant, with which they are surrounded and within their respective borders. These states are called "sovereign," and it would seem that the right to water within their legitimate reach is a sovereign right.

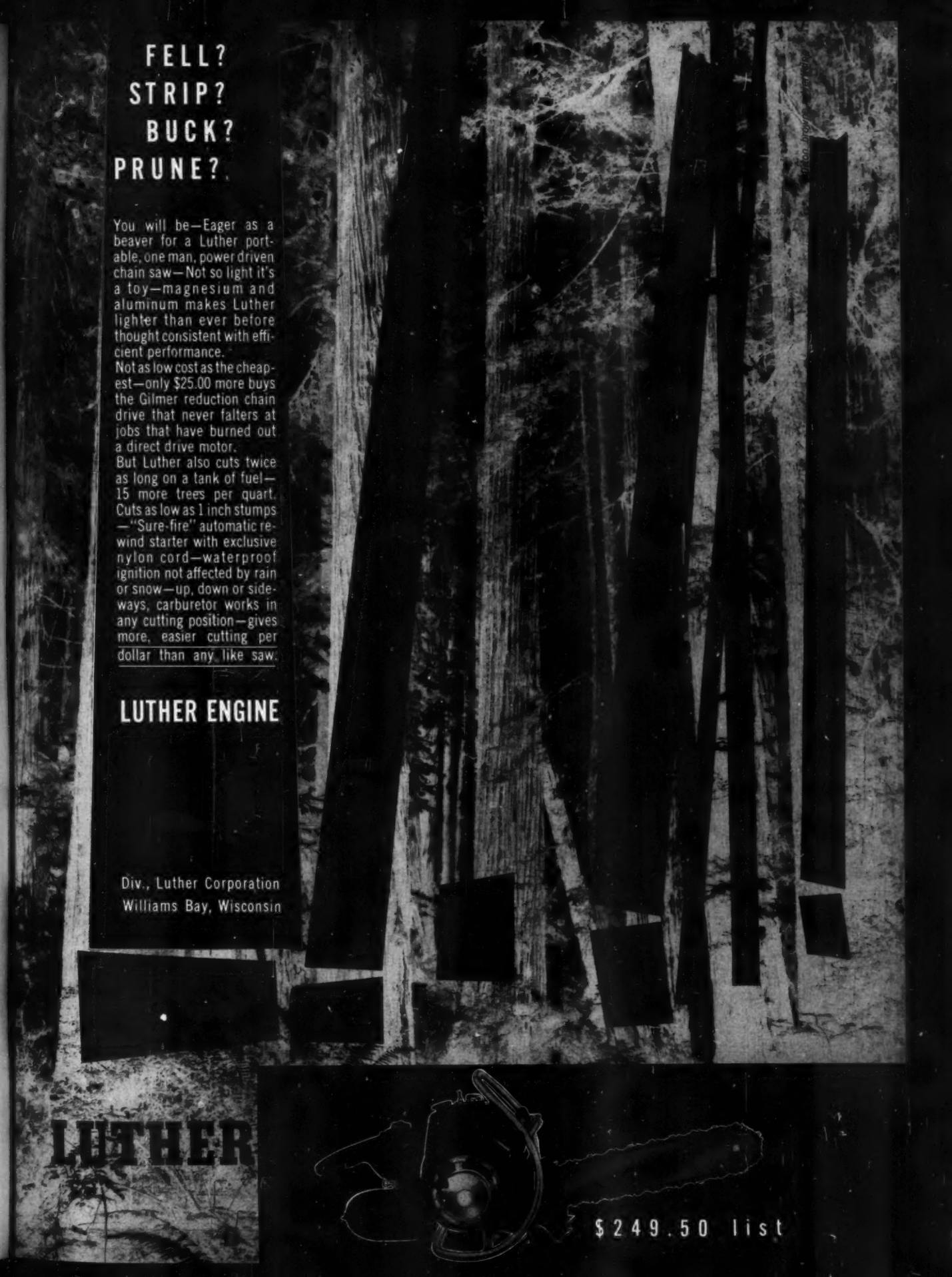
While he would prefer to see the monument remain in its natural state, Mr. Tudor stressed that water and power for western states are of paramount importance if the West is to advance. With tremendous evaporation losses the chief factor against proposed alternate sites, decision on whether to build Echo Park Dam will largely determine whether the whole storage project is economically feasible or not, the Under Secretary said.

On evaporation figures, Mr. Tudor said there has been some question as to the accuracy of the estimates of evaporation and the amplification of the formulas used to compute losses. He said he had reviewed this matter and while there may be some error due to a shortage of experimental data, that he is convinced that the comparative calculations are reasonable and any error that exists is equally applicable to the calculations for all reservoirs. Therefore, the error in net differences in calculated losses between any two reservoirs must be small, he said.

Echo Park, Mr. Tudor said, represents the key to the whole storage problem for five western states. And in weighing the value of water and power against the alteration of existing scenery in a region blessed with much magnificent scenery, Mr. Tudor feels that the water and power should be given priority.

In presenting the facts to AMERICAN FORESTS, both Secretary McKay and Mr. Tudor said that their recommendations on the storage project were subject to review by the Bureau of the Budget, the White House, the Congress and the American people. In view of opposition developing to the monument phase of the program, both said that all sides should be given full opportunity to present their views on the issue.

A westerner, Undersecretary Tudor was born in Colorado Springs, Colorado. After graduating from West Point he earned a degree in civil engineering at Cornell University. After a tour of duty in Corps of Engineers, he worked as a bridge designer with the California Division of Highways for several years. A lieutenant colonel in the Corps of Engineers in World War II, he had charge of planning a large volume of postwar civil construction including preparation of the basic plans for McNary and the Dalles Dams. Following the war he was vice president of the Knudsen International Company.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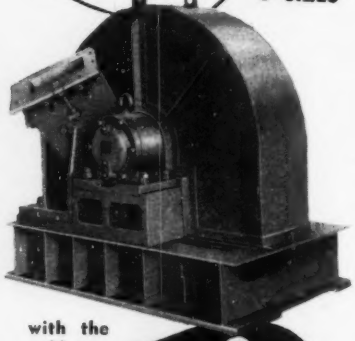

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Man from the Hurricane

(*From page* 18)

up into Canada and spent more than a year on timber cruising and survey work for the Department of Natural Resources, Forestry Branch, Canadian Pacific Railway Company. He learned much in that brief time, and he saw much — and a lot of it had to do with the future.

But of course in those days the best outlook for a smart young fellow out of forestry school was with the government. So in 1915 he joined the Service, and was given the duties of a forest assistant and forest examiner on the San Juan.

Three years later he was in the branch of forest management in the regional office at Denver. Then came four of what Tinker now recalls at the happiest years of his life. From 1920 to 1924 he was Forest Supervisor of the Arapaho and Bighorn National Forests in the Rocky Mountains.

"Riding those trails, day after day," Tinker remembers now, ". . . seeing the sun come up behind the crags of the Rockies. That was the life!"

Doubtless it was, but more and more responsibility kept crowding in on the young forester. The following four years he was assistant regional forester, branch of lands, in that Rocky Mountain region. And here he began his own branching out for the public good. He became chairman of the Rocky Mountain section of the Society of American Foresters.

His next step was into the North Central region, previously mentioned. Inexorably, under the great Chief Forester William B. Greeley, himself about to retire from government and into the industrial forestry field, Ted Tinker was moving toward Washington, D. C.

But by the time he got there, Colonel Greeley had gone; and Ted Tinker will tell you now that there were things about the political climate in Washington then that he could not approve. At all events, Tinker isn't sorry now that the hurricane of 1938 blew him out of the nation's capital and into the pulp and paper industry.

It didn't take Tinker long to master the profession of a trade association secretaryship. And once he had mastered that decidedly non-simple art, he made it secondary. It was more than natural that Tinker should see to it that there were other foresters on his growing staff — men like E. G. Amos and Don Rochester. Tinker had a conviction that his forestry background was certainly going to be the most important tool of all in his new work.

He was not long in the job before Pearl Harbor set a new scene for pulp and paper, as it did for us all. The industry began to have all it could do to meet the free world demand for products. It seemed as if all Tinker's problems were going to be concerned with emergency production, industry growth, and emergency government restrictions.

For a time that seemed true — on the surface. But never once did Tinker let go of his belief that interest in forestry matters was going to be both the salvation and the glory of the pulp and paper industry. When the war ended he put most of his heart and soul into that concept.

It was done, he insists now, not out of sentiment but out of economic necessity.

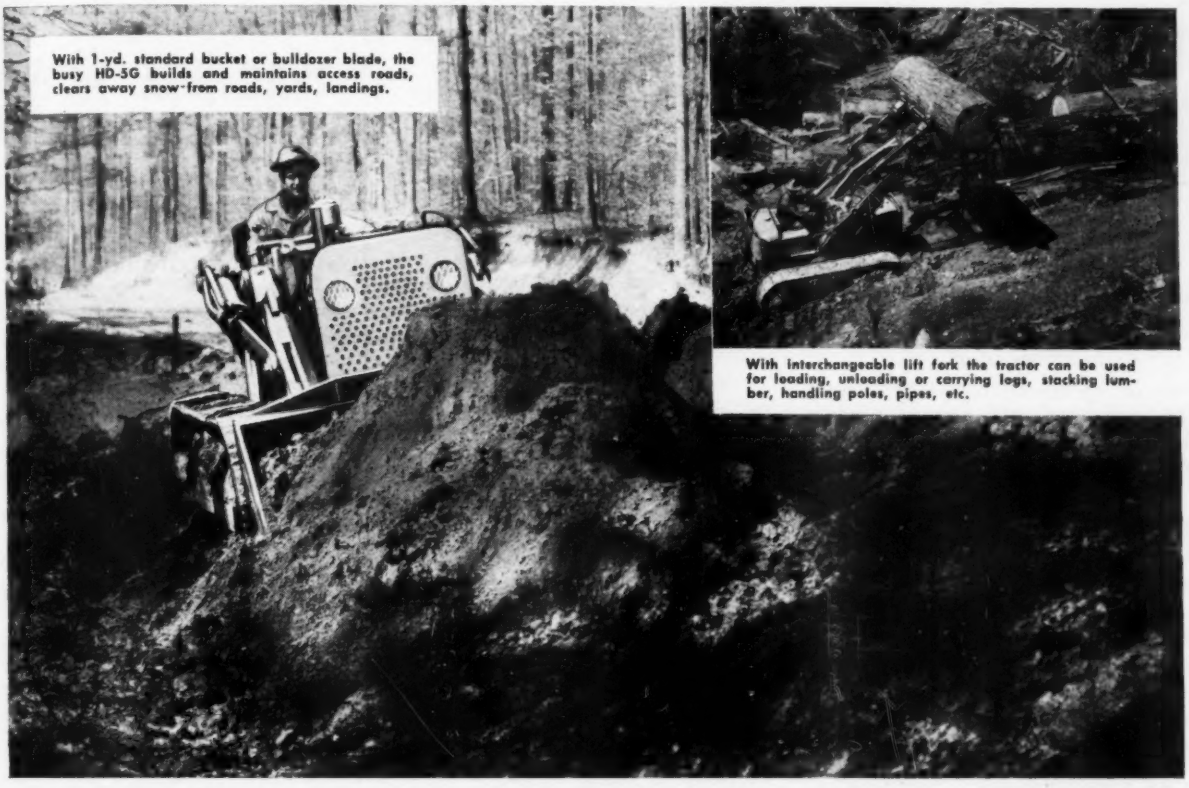
Tinker stresses that for a purpose, and goes on to say: "The cost is tremendous, but it has become an accepted part of the processes of industry, just as much as the operation of paper machines. I think it typifies the working out of the American free enterprise system. More, it suggests the pattern that will be followed with relation to the nation's renewable natural resources in the normal development of our economic pattern."

So far as Ted Tinker is concerned, that says it.

He can go on with more statistics, out of his survey of his industry, to prove his point. But he doesn't feel that's necessary now. The facts are there now, ready for anybody who cares to look.

The truth is something more, and really far simpler. Good forestry management and conservation *can* join with so-called "private" industry. The amalgam is good for all.

And today Ted Tinker, the ex-assistant to the chief forester of the United States, is a kind of living symbol of that amalgamation. He has made it work. With the pulp and paper industry he has indeed set a pattern worth following.



With 1-yd. standard bucket or bulldozer blade, the busy HD-5G builds and maintains access roads, clears away snow from roads, yards, landings.

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The versatile Allis-Chalmers HD-5G Tractor Shovel builds and maintains roads, dozes out or plows fire lanes, bunches toppings, clears out underbrush, excavates and loads dirt and gravel, handles logs, does dozens of jobs with savings in labor and money. Because of wide application, it saves on equipment investment. Let your Allis-Chalmers industrial tractor dealer tell you more — and *show* you what the HD-5G can do for you.

It clears out brush, bunches toppings, handles many clean-up and maintenance jobs in the woods. Rear-mounted winch adds to tractor's usefulness.

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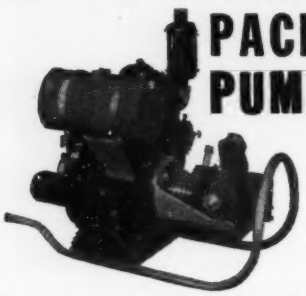

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The engine and pump are standard Pacific Units and have been fully tested and approved.

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DIMENSIONS

Length	28¾ inches
Width	19¼ inches
Height	24¼ inches

NET WEIGHT

GA-8 (without starter)	115 lbs.
GA-8-S (with starter)	140 lbs.

PERFORMANCE

Pressure	G.P.M.
50	26
100	24
150	22
200	21
250	20
300	16

Normal operation is 20 G.P.M. at 250 lb. pressure.

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The CCC Pays Off

(*From page* 30)

the owners were making money from their young tree crops; and also find out if their land was actually producing a return that might interest others in growing tree crops.

During April and May of 1953, numerous records of individual thinning operations in pine plantations made by the CCC were collected. These case histories, so-called, were taken on many different farms. These farms are located in 21 of the soil conservation districts in the states of Alabama, Georgia, Mississippi, North Carolina, Tennessee, and Virginia.

The "average" plantation was a mixture of slash and loblolly pine, 35 acres in size, and 14 years old when thinned in 1952. The products of thinnings were pulpwood, sawlogs, fence posts, and fuelwood. Most of it went as pulpwood.

About the first question a forester or good tree farmer would ask is, "Were those stands overcut?" Most of the plantations were marked for thinning by either a private or public forester. We might then assume they were not overcut, but let's look at the record. Eighty-one percent of the cubic-foot volume of the stand was left in trees for future crops. Only 19 percent of the cubic foot volume was removed. (Many good foresters will agree that 30 percent of the volume in a stand may be removed in the first thinning, if the stand is well stocked and has good tree and size-class distribution.) In this average stand there were about 550 trees six inches in diameter left on each acre after thinning. This is at least a couple of hundred per acre more than is necessary for adequate growth — with trees six inches in diameter. The stands were not overcut.

Perhaps the first question the average landowner might ask would be "How much money did he get?" Whether this is the first question or the last, it is the one that all private landowners must ask if they intend to stay in business.

Thinnings returned 12 percent annually on the landowner's investment of $17 per acre—his estimated land value at the time of planting. Products sold from thinnings brought $33.50 as stumpage. Taxes and fire-protection costs for 14 years were $4.50. This was a gain of $29

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per acre—a return of more than $2 from each acre for each of the 14 years.

The value of the trees left for future crops was $140 per acre. (At $5 per cord—the average received by all operators.) This is a capital gain of $10 per acre per year.

The total value of the tree crop, after deducting taxes and fire-protection costs paid, at 14 years was $169 per acre. This is a total gain of $12 per acre per year—a 70 percent annual return on the investment.

These are representative values produced by pine plantations made in the four Southeastern states of Arkansas, Louisiana, Tennessee and Texas, plus the six listed above. (They may not be comparable with those from other states, yet a single row windbreak in the citrus area of southern California is considered more valuable than a row of orange trees.)

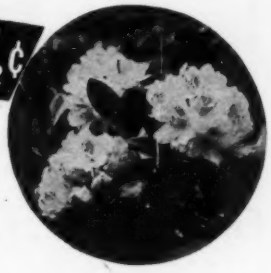
Let's look at what has been produced in these ten states from tree plantings made by CCC camps assigned to the Soil Conservation Service. Enrollees in these camps planted 168,721 acres of worn-out farm land to trees. Based on the sample, this means that the wood produced by the plantations has a present value of about $29,000,000. At least that much is on the score board, and a nice figure it is. Especially so since these millions of dollars have been produced on land so severely eroded that farmers could not use it for anything else.

What has happened to tree planting since the CCC? Farmers in these same ten states are planting more trees each year. Last year they planted more than 350 million trees—most of them on farms in soil conservation districts. This means that 350 thousand acres in these ten states were put to good land use in 1952—350 thousand acres protected from serious erosion—350 thousand acres growing more "green gold" for hundreds of landowners.

Farmers in soil conservation districts have cooperated with forest industries and state foresters in getting more trees to plant on land well suited to tree crops.

Statements by many landowners showed a deep appreciation for and a good understanding of the values of wise land use. They have a confidence in their future and the future of the productive power of their land—maybe this is worth as much as their trees.

RHODODENDRONS LOW AS 37½¢



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		Rhododendron
10.50	37.50	maximum (White, July)
16.00	58.00	catawbiense (Rose, June)
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12.00	42.00	Leucothoe (White, May)

Size 2—Several-stem clumps balled & burlapped, 12 to 15 inches. Express on 25 about $5.00 on arrival.

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$27.50	$100.00
27.50	100.00
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Also Larger . . . A limited number of bushy, heavy clumps, 18 to 24 inches high. Balled, burlapped and packed 5 to box (your selection of varieties listed). Express (about $5.00) on arrival. **$16.75**

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SPECIAL OFFER B: 5 each of Size 1, 25 plants, Exp. not pd. . . . $17.00

SPECIAL OFFER C: 1 each of Size 2, 5 clumps, Postpaid $9.25

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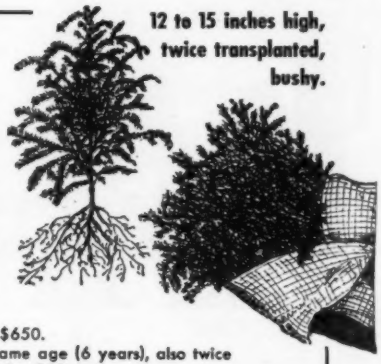

12 to 15 inches high, twice transplanted, bushy.

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THE RIGHT ANGLE PRISM

This compact instrument consists of a single ground triangular prism and it, therefore, cannot get out of adjustment. A plumb bob can be attached to the hook of the handle.

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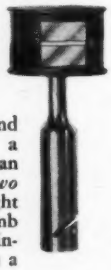
This instrument gives a slightly larger field of view and is adjustable. As an added feature, a small plumb bob is conveniently stowed in the handle.



THE DOUBLE RIGHT ANGLE PRISM

Consisting of two ground pentaprisms separated by a plano-parallel element, it can be *placed on a line between two points* and a third point at right angles can be sighted. A plumb bob can be attached or the instrument can be mounted on a staff.

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Battle at the Tide Line

(*From page* 11)

Miami campus in Coral Gables, some distance from the water, there has been difficulty getting enough fresh sea water to keep specimens alive. In August 1953 a new laboratory building was constructed at Virginia Key, on Biscayne Bay, a few miles away. To this modern concrete structure, with adequate circulating seawater, was transferred all laboratory rearing of Teredo and Limnoria, together with the physiological operations that require the use of living material.

Without going into technical details, let's take a look at some of the major findings thus far. The laboratory staff emphasizes that some of these findings are tentative, subject to further check and re-examination. Other phases of the marine borer program are hardly more than midway, while some aspects remain in the planning stages.

One big question that has puzzled every scientist who has approached the borer problem is whether or not the shipworm uses the wood it excavates for food, or whether it merely is providing a bigger home for itself and passing the shavings through its body and out through its pallets. In other words, does wood help the Teredo to maintain its carbohydrate metabolism? Dr. Charles E. Lane and Mr. Leonard J. Greenfield, staff members who are exploring this phase, have shown that Teredo has the enzymatic (digestion) equipment to digest cellulose and to convert it to glucose. This is the explanation, they say, for the high glycozen (a white carbohydrate) levels which obtain in Teredo, almost uniquely among mollusks.

This important discovery points the way to the development of a toxin or poison with which wood may be impregnated, yet a toxin that will be harmful only to marine borers, and not to such useful and highly important forms of sea life as oysters, clams, crabs, shrimp, scallops, lobsters and fish.

Study is being concentrated also on the larval stage of the Teredo's life because here it seems most vulnerable. The larva of most marine borers must attach themselves to some kind of wood pretty quickly, or die. One species of Teredo can survive only 72 hours after it is ejected from the mantle of its mother, unless it finds a piling or bulkhead to call home.

Tests show that creosoting acts definitely as a repellant to the borer larvae out home-seeking, provided that its essential compounds have not been leached out by sea water. Which compounds or ingredients do the business is still unknown.

To determine which these are, the staff has developed a method of speeding up the leaching of creosoted wooden panels. In cooperation with the Naval Research Laboratory accelerated leaching experiments are being carried out by placing thin strips of wood, with a 20-pound creosote treatment in an 80° C. (190°F) bath for two weeks. When these leached panels are placed in sea water it has been found that they have lost all resistance to the borers. Thus the underwater wear and tear of 10 or 20 years can be approximated in the brief period of two weeks. Further experiments will use these panels to test the various constituents of creosote, one at a time and in various combinations.

Because Dr. Smith and his associates feel that panel tests offer the most promising approach to the basic problem of wood preservation by chemical treatment, a special meeting of the members of the Marine Laboratory and the Naval Research Laboratory was held at the University of Miami, July 1-3, 1953, and the following procedure was set up for future evaluation work of various creosote treatments and acceleration leaching tests:

1) Test panels shall be of southern pine, sapwood, knot-free, low in resinous materials, uniform density. Dimensions: 5" x 1½" x ⅛".

2) Test panels with whole creosote shall be impregnated from the level of 5 lbs per cubic foot to the level of 20 pounds per cubic foot.

3) Test panels prepared with fractions of creosote shall be impregnated from the level of 10 pounds per cubic foot to 15 pounds per cubic foot.

4) Each set of panels tested shall be given a set number.

5) Panels being exposed shall be inspected and rated bimonthly. They shall be scraped free of fouling biweekly.

The program also sets up a rating system, by fractions, so that the results of the tests can be evaluated in a uniform manner.

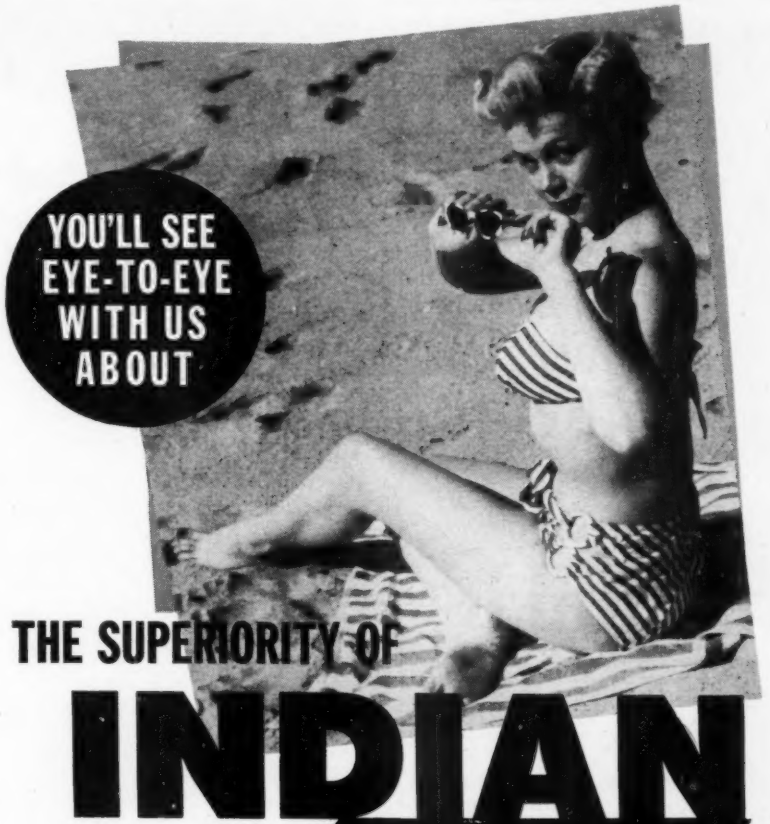
A large tank has been built in the Virginia Key laboratory to receive several shipworm-infested blocks, which have been exposed in the bay for several months. An all plastic, non-toxic trap has been constructed to catch the larvae. The staff will thus have an ample supply of larvae for laboratory studies to supplement field studies and to carry out a complete study of all stages of larval development between the egg and the adult.

Other studies at the Marine Laboratory show that the intensity of borer attacks is also related to the velocity of water currents. Teredo do not attack timber where the current runs at more than 1.4 knots. Limnoria stay away from currents of 1.8 knots or better. Which information may already be useful to those who have a choice between quiet water and places where the tidal flows are heavy and swift. If it is sea water, put your timber installations along the latter.

Another helpful hint from the Miami staff: "Clean up old piling, rotting wharves, or sagging bulkheads." They are probably impregnated with borers of one kind or another, and are breeding places of these termites of the sea. Any untreated timber will become quick and easy prey, and eventually borers will get the treated wood, too.

Ever since the launching of the marine borer project the Navy and the Marine Laboratory have received numerous letters and other expressions of interest from waterfront cities, railroads, canal operators, bridge and pier maintenance concerns, as well as fishermen and yachtsmen. While they agree, for the most part, that creosoting and other treatments are helpful in prolonging the life of timber exposed to sea water, they want to see a more direct attack, one that might make unnecessary all the expensive wood treatment processes needed today.

Dr. Smith and his associates, while they won't go out on any limb, say that real progress is being made in that direction, and they are most optimistic about the results of experiments now under way. The Navy's Bureau of Yards and Docks promises that all the scientific findings and recommendations of the project will be made available to the public.



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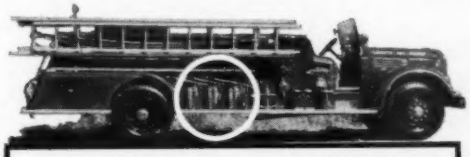

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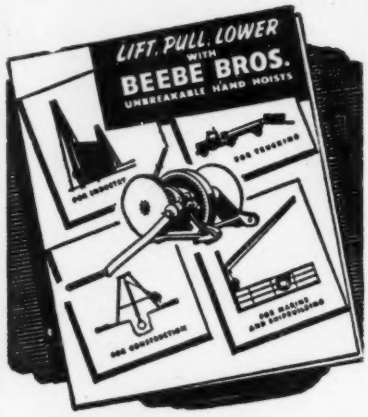

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By MARVIN E. FOWLER

Division of Forest Pathology, Plant Industry Station, Beltsville, Maryland

WESTERN white pine, the most valued forest tree in the northern Rocky Mountain region, is threatened by a disease of unknown cause. The disease is prevalent in forest stands of pole size, from 40 to 100 years of age, hence the name pole blight. Older or younger trees are occasionally affected.

About 25 years ago a forester observed an unexplained dying of pole-size white pine on the Kootenai National Forest. A decade later the disorder was known to be widespread through a large part of the panhandle of northern Idaho. The appearance of this disease in stands in which the pine has been making excellent growth for 40 or more years, the high percentage of trees affected, and the apparently certain death of all affected trees have alerted foresters, pathologists, and timberland owners to the alarming potentialities of this disease. These pole stands are the future white pine forests; their destruction would be a major calamity to the economy of the area.

The external symptoms of pole blight, yellowing and sparseness of foliage and shortening of needles and of terminal branches, are easily recognized, even from a distance. These symptoms develop first in the upper tree crown and are readily distinguished from symptoms of white pine blister rust, also present in the area. A close examination of trees reveals that bark lesions are associated with the disease.

The Forest Pest Control Act of 1947 provided the foundation for an effective program for controlling forest insects and diseases. Under this Act Congress provides funds for surveys and control programs for these pests. During the summer of 1949 the Division of Forest Pathology initiated and organized survey for pole blight of western white pine, with funds provided by the Act.

A preliminary test in a low-flying airplane revealed that western white pine could be distinguished readily from its associated tree species from an airplane 200 to 500 feet above the tree-tops; also, stands with moderate to severe pole blight could be distinguished from those with only an occasional pole-blighted tree or from entirely healthy stands. Yet pole blight could not always be definitely determined from the air. Suspected stands were examined on the ground to determine if the symptoms seen from the air were caused by the blight or from some other condition such as logging injury, sun scald, or root rot.

Airplane scouting to locate stands with symptoms of pole blight enable a few men to inspect a large area of inaccessible forest lands in a relatively short time. The 750,000 acres of pole-size stands of western white pine in northern Idaho and adjacent Washington and Montana have been surveyed and over ten percent of these were found to have from moderate to severe pole blight. The disease was found to be prevalent in the United States from the International Boundary southward to Disalto Creek in the St. Joe area of northern Idaho. The southernmost known occurrence of pole blight is only 35 miles north of the Clearwater area, which is famous for its valuable stands of western white pine and from which about 70 percent of the sawlogs of this species are cut.

Pole blight is spreading and intensifying in some areas. The extent of damage is alarming in much of the affected area. Research on pole blight, currently conducted by the U. S. Department of Agriculture, the University of Idaho, and the Canadian Department of Agriculture, is being directed toward determining the nature of the disease and finding a method of controlling it or of reducing damage. In the meantime, the future of western white pine as the principal timber species in the affected area is in doubt.

Famous Forests

(*From page* 15)

feet or more of snow. Also in these groves are sugar pine, incense-cedar, ponderosa pine, etc.

The California redwoods, which Bret Harte very unfairly called "The Big Trees' poor relations," grow in the moist, foggy strip of land down near the ocean, and while they are seldom over 25 feet in diameter, they frequently grow to be over 350 feet high. Another difference is that the redwood stump will sprout and grow into a new tree, while a Big Tree will grow only from seed, and these seeds are smaller than many ordinary garden seeds.

Not everyone was indifferent to the fate of the Big Trees, however, and as early as 1879 there was serious agitation to preserve them. Particularly active was Col. George W. Stewart, publisher of the Visalia *Times Delta,* and the citizens of Tulare County. Another factor was the Kaweah Cooperative Colony formed in 1885 to cut the Big Trees up into lumber on a cooperative basis. Coast lumbermen figured this as unfair competition and added their protests to those of scientists and naturalists from all over the world, as well as citizens from all over the U. S. The result was that in 1890 Congress formed the Sequoia National Park to preserve and protect these ancient trees for the pleasure of future generations. In recent years, either by purchase or donation, the area in which the Big Trees are protected has been enlarged enormously, and today nearly all of these trees are in either the Sequoia, the Kings Canyon, or the Yosemite National Parks, where they are guarded against fire, and visited by over a million persons a year.

John Muir and other responsible observers have stated that several of the Big Trees are 4000 or more years old, but there appears to be some difference of opinion in the matter of counting the annual rings which, in some cases are so close together as to require a magnifying glass.

However, whether the oldest trees are 3500 or 4000 years old does not seem to be of great importance, for present day forestry people are pretty well agreed that, so far as there is any danger of their dying of disease, there is no reason why these trees shouldn't live to be 6000 or 8000 years old—or even older. Fire, lightning, and an uneven distribution of weight, are about the only things which bring them down—

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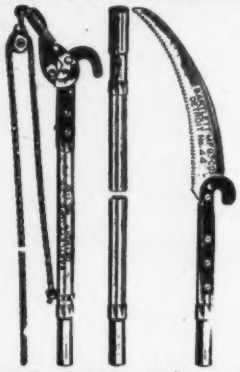

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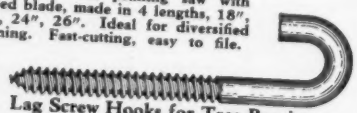

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and most of them have survived repeated attacks by the first two of these.

The Big Trees grow only from seeds which have kernels less than a quarter of an inch long and run 3000 to the ounce. Some have said that these seeds, falling in clouds from the cones hundreds of feet in the air, look like tiny golden insects drifting to the ground. The cones mature slowly, and only by their third year do they dry sufficiently to release their seeds. Fertile seeds are produced from about a tree's 150th year till it falls — certainly through its 4000th year.

In its first year of life the seedling is beset by many perils. It is only an inch or two high, and it must survive birds, cutworms, ants and rodents. Furthermore, it must find good earth in which to germinate, and the forest floor under the parent tree is covered with so many feet of needles, cones, bits of bark and other debris that it is impossible for a seed to find soil. Only if it is blown several hundred feet away does it have a chance. Consequently, for all the millions of seeds a Big Tree scatters every year only a very few get a start under natural conditions.

But even before the seeds fall the cones (each of which holds about 300 seeds) must be allowed to mature on the tree — and the squirrels are crazy for them. Forest rangers making a test reported that in 12 days one squirrel climbing about in a Big Tree, cut off, dropped to the ground, and hauled away and hid, enough cones to fill 38 barley sacks!

Today Big Trees are cultivated in nurseries under wire netting which protects them from most of their enemies. When they are two to three feet high they are transplanted, either to suitable sites in the groves, or in other parts of the world. Some Big Trees planted in the Black Forest in Germany 75 years ago, are doing very well, while one in Statfield, England, is already 150 feet high.

By its second century, the Big Tree is really getting into its stride and is growing more rapidly. When it is about 150, its appearance changes drastically. The lower boughs drop off, and strange, irregular stumpy boughs which point up instead of hanging down, appear.

The Big Tree's root system which must supply it with water for thousands of years, is not like that of other trees, either. After about the eighth year, the taproot, which in most trees goes straight down looking for water, almost ceases to function in the Big Tree, and runs off horizontally. Instead, the Big Tree depends on enormous runner roots, each as big as an ordinary tree, which go off as much as 200 feet in all directions. These not only insure an adequate food and water supply, but provide a secure bracing for the 6000 tons of trunk, branches and foliage towering above. As to how a tree can find food in the same two to three acres of ground over 4000 years, the answer is that most of the tree's food is manufactured in the leaves (needles) from air and water. The soil provides only the water and essential minerals, which come from decomposing rock.

The Big Tree's bark, which is usually from one to two feet thick, is probably the most important factor in making it so long-lived. This asbestos-like material resists fire to an extraordinary degree, and since it is 72 percent tannin and acts as an insecticide, it keeps out insects.

Nearly all Big Trees have been shattered many times by lightning and none, it is estimated, is anywhere as tall as it would have been had it not been hit. Often, too, in past ages, lightning has caused fires which have raged through surrounding forests and destroyed all but the Big Trees. These, however, show by their scars that most of them have been severely burned many times, often so severely as to leave deep holes as much as 15 feet wide. While the bark will not burn readily, a fire of several days' duration will make it char, and penetrate to the wood. While an ordinary tree would long ago have died, the Big Tree has such a vast reserve of life and strength that so long as enough of the bark and sapwood on one side of the trunk remain intact, the tree will recover, slowly growing new bark to cover the wound at the rate of a half inch a year. Thus, a burned section ten feet across would take some 240 years to heal—a long time by human standards, but not too much to a Big Tree.

Visitors to the Big Trees today can actually see such a wound healing in the General Sherman, the biggest of all Big Trees — 36 feet in diameter, and 272 feet tall. When first noted, this burned-out cavity was a good-sized hole ten feet deep in which, one winter, a bear was found hibernating. Every year the opening has become smaller, and although a man can still stand upright in it without touching the top, there is

no question but that in another 200 years or so it will be entirely sealed over. It is known that the fire which caused this hole occurred well over 700 years ago, because some young (700 year-old) trees nearby show no scars.

Most of the bigger trees have names, such as The General Grant, The Grizzly Giant, The Californian, The Susan B. Anthony, etc. In addition, there are some trees which are more or less curiosities, which all tourists see. One is the Hollow Log, inside of which it is possible to ride a pony for a hundred feet or more. And most motorists drive through the still standing Wamona, or tunnel tree, in the Mariposa Grove, which was cut in 1888 and made "big enough for a six-horse stage to pass through."

And what happened to Hale Tharp? Well, when he settled down in the Big Trees he went to live in a hollow log he found, in which he had a room 56½ feet long and from eight to four feet high. He put in a door and window and was very comfortable, and lived there off and on till 1912. His log house is also visited by tourists who go that way.

As to the name Sequoia, which applies both to the Big Trees and the California redwoods — it was given to these trees without any very special reason. Sequoia, or Seq-uoy-ah, was born in Georgia in 1770, the son of a Cherokee Indian mother and a German trader. A silversmith by trade, Sequoia invented an alphabet of 28 letters for writing the Cherokee language, and for awhile a newspaper was published using this alphabet.

Sequoia received official recognition from Congress for the alphabet, and you can see his statue in the Capitol Building today. Since Sequoia lived for a time in Oklahoma, his statue is marked "Oklahoma."

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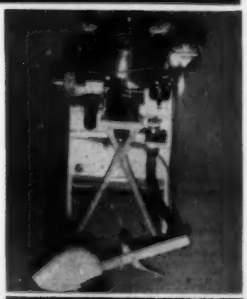

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World's Greatest Traveler

(*From page* 25)

another. Which explains why he selects only unoccupied sandy islets for breeding, and why he likes best the vast nesting grounds of Alaska, where the great numbers of lakes and waterways make him comparatively safe from his enemies.

This wing-happy bird, with his marvelous endurance and uncanny sense of farflung direction, symbolizes the whole mystery of migration. A mystery which can be summed up in one word . . . *How?*

Cameramen of the Moody Institute of Science have recently caught on film a record of some of these remarkable long-distance flights. Their pictures show not only the tern but the golden plover as well, on his 2500-mile non-stop flight from Siberia to Hawaii, setting himself down without error at the same small island year after year. And more remarkable still, being followed on the incredible journey by the young birds after they hatch. These latter cannot even have a memory of former flights to guide them, yet they make it without fail.

It is believed these flying hosts are smart enough to ride the winds whenever they can, rather than fight them, and planes have sighted—and photographed—some birds as high as 29,000 feet. Many thousands founder annually on the long and rigorous journeys of birddom, but out of billions on the wing these scarcely count.

As a whole, the migrating bird population prefers the lands north of the equator since there they have more hours of light in which to feed, and for this reason most migratory birds bring up their families in northern countries.

However, every part of the earth benefits incalculably from its bird citizens, whether their stay is a long or short one. Were it not for their indefatigable efforts in insect-control, man would be in serious danger of having the bugs take over. A bird, for his size, is one of the biggest eaters known—it is nothing for a robin to hunt down and swallow 15 worms in an hour. One owl can put away ten vari-sized mice and other small creatures in a single night and still be hungry.

Zoologists indulge in a good deal of controversy on the subject of migration. They advance numerous theories explaining the origin of these mass habits of travel, but no single theory seems entirely satisfactory.

It was once believed that birds possessed a sensitivity to the earth's magnetic field and to the effect of the earth's rotation about its axis, but this theory has largely been discredited. Moody Institute scientists, showing their remarkable films of birds in migration, suggest that this is an example of Divine Intelligence and but one of the countless wonders of God in nature.

Man, traveling along in his sleek, high-powered conveyances on well-marked highways, usually calls it a day when he's journeyed a few hundred miles. To our feathered friends, this is only a starter. The bird's fragile structure, comprising light and spongy bones, a few strong muscles like the great pectoral muscle which forms the larger part of his breast and depresses the wing, and a nervous system not much more developed than that of reptiles, is capable of a prodigious amount of apparently unstrained effort.

Next time you fold up your map, fill your speedster with gas and set your course for some town half a day's journey away, give a passing thought to that indomitable traveler, the Arctic tern. He's probably refueling with a hearty meal and setting his fabulous compass this very moment to cross the Atlantic from Labrador to France, after which he'll fly down the western shore of Africa. Apparently this globe-spanner never heard of the *impossible.* He just does it as a matter of course!

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FORESTERS in the Douglasfir region of western Oregon and Washington are employing "undercover" tactics to get rid of their logging slash. They are utilizing another end product of the forest — paper — to keep their "powder" dry until ready to fire — their slash.

Crown Zellerbach foresters are experimenting with a new technique in slash burning which may have area-wide possibilities, including British Columbia's Douglasfir region. The technique consists of putting a paper "roof" over slash piles to insure their dryness for subsequent burning.

Slash is the residue remaining on the ground after a logging operation is completed — usually tops and limbs of trees, foliage and logs unusable because of decay or mechanical or natural breakage. Slash is a fire hazard. State forestry laws in Oregon and Washington make it mandatory that operators and/or landowners dispose of logging slash to abate this fire hazard.

Most important of all in slash burning, the weather must be right.

Crown Zellerbach foresters reasoned that the solution was to cover *some* of the slash and keep it dry enough to burn even after heavy rains. To shield the slash from pelting rains, Crown Zellerbach men went to their own pulp and paper mills. They selected a creosoted building paper, impervious to moisture. This material was available as reject-grade stock in five and six foot wide rolls.

This paper covering was tried experimentally a year ago in the Camas, Washington, area. Results were satisfactory. The paper withstood the winter's rains without going to pieces and kept the slash dry. This fall the experiment was extended to Crown's Molalla tree farm in northwestern Oregon. When it had rained hard enough so that no forester would even think of trying to burn slash, the protected piles were set afire. The dry material burned readily, and later ignited the wet, uncovered slash.

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Where AFA Stands

(*From page 4*)

membership so that we can turn out a larger magazine with wider coverage and with more use of art and color work than is now feasible. This has been under constant discussion and I do not need to elaborate on it here.

My fourth point is one of general policy. I hope to see The American Forestry Association develop as a wise, dependable and forceful leader of thought, policy and effort with respect to our forest and allied resources. It should be militant when required, but should not "go around with a chip on its shoulder." It should favor leading the way by example and persuasion rather than try to push from behind by edict and compulsion.

I hope that we shall merit and win the reputation of studying faithfully and presenting fairly both sides of conflicting issues, of arriving at wise and courageous decisions, and of advocating the indicated ensuing actions with all the forces at our command. Every measure and every proposal should be weighed on its own merits as to its over-all and long-range effects upon the public good. Our resource use problems have become so complex that it is difficult for any one individual or even group of individuals to become broad enough in outlook to understand fully all the implications of a proposed action. Both our emotions and our necessarily limited individual knowledge and experience are bound to color our viewpoint. Probably a majority of those arguing special interests are doing so in all sincerity rather than from selfish motives. I consider it the job of The American Forestry Association to first inform itself and then inform others of the facts in each case and to work unflaggingly for broader understanding and the consequent resolution of conflict. We should try to exert our influence through logic rather than mere repetition of an idea and through cooperative effort rather than constant opposition. If we can thus win the respect of governments, of industry and of all elements of the general public, I am sure that we can count upon their support.

The American Forestry Association has a long and consistent record for supporting both national forest and national park systems. Some of our friends feel that we are changing our policy with respect to these federal lands. Nothing could be further from the truth. It is because we have such strong faith in our national forest system that the Higgins Lake Conference recommended a careful nationwide and state-by-state study. When the facts are brought out, the national forests will emerge stronger than ever before. A few minor adjustments may be made to alleviate sources of justifiable conflict but no major changes are contemplated. The study should result in formulation of a well defined and widely recognized policy which should relieve the forest administration of most of the pressures which are now hampering most efficient management.

With respect to national parks, national monuments, federal wildlife sanctuaries, state parks and forests, local parks and forests, natural areas and wilderness areas, the situation is considerably more complicated. Basically we always have been and still are "for" all of them. Yet if we are to be consistent with our premise of weighing each case on its own merits we cannot join the attempt to lump them all together and fight equally for every inch of each.

For example, we have consistently supported wilderness areas and have encouraged their proper use by our Trail Riders of the Wilderness. Yet we do not believe that either the number or the total area of such wilderness areas has been scientifically worked out. Like the other

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parks, forests and areas, they contribute to national health. Unlike the others, however, their beneficial effects and usefulness are quickly destroyed by too great use. Furthermore, they cannot pay their own way in returns from the actual users. Consequently the nation can afford only a certain number of these tracts in a definitely limited total area. The number, areas, and actual locations must be determined on a national basis, since it is impractical to do so piecemeal or by local option. Local residents might well approve in principle but would prefer to have these non-revenue producing areas located in someone else's county. If local people are permitted to choose between a wilderness area and an irrigation project which will create new valuable farms, or a fine highway which will bring more customers to the area, or a pulp mill which will bring more employment and more money spent in the community, or an intensively developed park which will bring in more vacationers with money, they will naturally choose the revenue-producing activity.

Local parks and forests and small natural areas are quite a different matter. These are used intensively by local residents and form an important part of their everyday lives. Both the rapidly expanding population and the increased leisure time augment the need for and encourage the development of new and expanded areas. At the same time the competition for land which is generated by the population pressure will tend to curtail the expansion of large areas such as wilderness areas and new national parks.

This variety of use and purpose and the growing tendency and indeed necessity of using all the nation's land more intensively — whether it be for agriculture, for timber production, for water production, for recreation, for urban development, or whatever — makes it unwise to take an uncompromising stand on all types of land used for recreation purposes. In general we believe in maintaining the lands we now have for park and recreational use and in acquiring new ones, especially small areas, wherever it can be demonstrated that it is in the public interest to do so. But we must approach the subject realistically and be informed of the facts on each area. Perhaps foresters know better than any other group that the administration of forest land in the broadest interest of the

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public requires compromises in multiple use and that each forest is a different biological complex from any other. In the long run a careful and objective study of the national parks and the wilderness areas is sorely needed and would result in a stronger and more effective system.

An example of beclouded issues occurred at a recent meeting of a conservation group in Washington. An attempt was made to lump together the consideration of Rock Creek Park in Washington, D. C., the Dinosaur National Monument in Utah and Colorado, and the Olympic National Park in Washington state. We were entirely in accord with the objective of keeping a parkway out of Rock Creek Park on the basis of the large use of this federal park as such by residents of Washington and vicinity. The issues in Dinosaur Monument and Olympic Park are entirely different ones, involving conflicts between water and certain types of recreational use on the one hand and recreation and timber on the other. The meeting had been advertised for the discussion of the Rock Creek Park proposal. The other issues were brought in unannounced and without sufficient time to consider each fully. After careful study of each of the other two proposals, all present might have arrived at the same stand on each as that of the principal speakers at the meeting, but certainly the audience was not well enough prepared and informed at the meeting to make an intelligent stand. This blanketing together of issues is dangerous and can easily lead to hasty and unwise decisions. For these reasons, the AFA is likely to "make haste" more slowly than some of our friends in the wildlife, parks and other conservation groups might wish.

I am taking the liberty of sending a copy of this letter to Carl Shoemaker so that he will know that we appreciate and have taken seriously his constructive criticism. Naturally he will understand this is my own viewpoint and that our final policy and our *modus operandi* will be determined by you and the Board of Directors.

AFA to Support Ellsworth Bill if Amended To Provide Greater Public Safeguards

Rep. Harris Ellsworth's bill (H.R. 4646) to prevent federal lands acquisitions from unduly interfering with sustained-yield operations on private forest lands will be supported by The American Forestry Association if amended to provide greater safeguards for the public interest.

The bill was considered unsatisfactory by the Association as originally submitted. However, the AFA is withdrawing its earlier objection to the measure as a result of an amendment proposed by the Oregon Congressman that would more properly protect the public interest. This amendment parallels to some extent proposed amendments drawn up by Lowell Besley, executive director-forester of the AFA, and submitted to Rep. Ellsworth last month.

H.R. 4646 is for the purpose of providing help for private owners practicing sustained yield forestry whose lands are condemned for use by public agencies. The bill provides that in such cases a careful study shall be made whereby certain public lands might be exchanged to avert any hardship on the part of the private owner. As is well known in the West, payment of money to owners of condemned land does not always justly compensate them for their loss of land.

Under the amendment proposed by Rep. Ellsworth, federally owned timber lands eligible for transfer shall not include lands within the boundaries of national parks, monuments, wildlife refuges, administrative sites, wild or wilderness areas, forest experimental areas and developed recreation areas.

The amendment further provides that before any transfer of federally-owned lands that an advisory public hearing shall be held by the department or agency having jurisdiction over lands for presentation of the advantages and disadvantages of the proposed transfer, including views of interested persons as to whether: a) the private timberlands subject to condemnation are being operated under sustained yield management; b) the interference with the existing processing operation resulting from the acquisition of the privately owned timberlands will be substantial or serious; c) the transfer will be to the public interest and will not seriously affect an existing sustained yield operation on the federal lands to be transferred in part.

Your Shade Trees

(*From page* 31)

greens, "Podocarpus." Both the public and the scientists refer to it by that name.

It is interesting to note how many trees are referred to as cedars: white cedar, red cedar, canoe cedar, cigar-box cedar, ground-cedar, incense-cedar, stinking-cedar, etc. And yet, the only true cedars occur in Asia and North Africa, of which there are but four species, including the famous Biblical Cedars of Lebanon (Cedrus libani). They are growing in this country only as exotic ornamental specimens and are very distinctive and decorative trees in landscape planting.

MIDWESTERN MEETING

The ninth annual meeting of the Midwestern chapter of the National Shade Tree Conference will be held February 17-19 at the LaSalle Hotel, Chicago, Illinois. Organized to encourage the planting of more shade trees, and to promote within the trade better observance of approved arboricultural practices, the chapter is composed of commercial arborists, city foresters, park superintendents, nurserymen, educators, research scientists and others interested in the propagation and care of shade trees and ornamental shrubs.

The convention is open to all who wish to attend. Registration of delegates will begin at 8:30 a.m. Wednesday, February 17, and the first paper will be presented at 11 a.m. The program is directed toward discussions of primary concern to the Midwest, but included also are topics of general interest.

The following case will illustrate how common names of trees may even influence legal contracts:

A contractor had agreed to furnish and plant 40 "red oaks" on the grounds surrounding one of our state capitols. When the job was about half completed the superintendent of the grounds discovered that some of the trees were scarlet and a few were black oaks. The contractor had gathered the trees from the surrounding woodlots where the people classified the oaks as either red or white oaks. Since the contract did not specify the botanical name of the red oak (Quercus borealis) it was finally agreed to accept what the local people called these trees — red oaks.

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READING ABOUT CONSERVATION

By ARTHUR B. MEYER

THERE'S a touch of magic in the story of cellulose and how man has converted it into such diverse products as plastics, lacquers, rayon, films, nylon and explosives. It's all interestingly told in *Cellulose: The Chemical That Grows*, by Williams Haynes. (Doubleday & Company, 286 pages, Price $4).

What is cellulose? Well, it is the main building material of a tree, for example, and the chief constituent of wood. How it is produced in the tree is a little epic of life itself. It is the story of water, mineral matter and carbon dioxide and how they all got together. The carbon dioxide enters the tree through the leaves. Rainwater that has filtered through the soil and united with mineral salts enters the tree roots and travels up to the leaves. Inside the leaves are small green bodies called chloroplasts. In the presence of sunlight, these chloroplasts are able to start a chemical reaction in which all these raw materials are concerned. This reaction literally tears apart the molecules of carbon dioxide and hydrogen present in water. Thus a number of plant foods, including starch, are formed. The starch is converted to sugar. The sugar is converted to cellulose which is either used at once by the tree or stored up.

Mr. Haynes' book is basically a story of progress in the science of chemistry and of the application of scientific findings by industry for the production of many marvelous products for human use. Even so, it is a story that is just beginning to unfold, in the author's opinion, and is one that has almost limitless possibilities.

Along with that story of chemistry and industry the author stresses the fact that "this greatest of our raw materials" is not only abundant and widely available on a world basis but is also renewable. "Unlike our great mineral raw materials—coal, petroleum, sulfur, phosphorous, potash, and all the metals—whose supply on earth is fixed, cellulose is a product of all living plants. It is truly a substance of superabundance in nature." We shall never, he says, run short of this raw material.

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From the standpoint of wood as a raw material for processing, as a supply of this substance which may be formed into many things, there is apparent significance. Wood in its natural state was the first form of cellulose used by man. But in very few instances have the chemists turned to wood first as a source of cellulose for synthesizing. They have, though, repeatedly turned to it when other sources became costly or short in supply. The author points out that "an acre in the Southern Cotton Belt will grow in seven years five times as much cellulose in pine trees as all the cellulose in seven successive cotton crops on the same acres, and at a fraction of the labor costs, without fertilizer, on land so poor it would not grow any cotton at all."

The marvels of technology, the courage and energy of industry are apparent in the story told in this book. So too is the importance of the supply of raw materials. The author, recognizing the exhaustability of non-renewable resources, views with optimism our ability to make from renewable resources not only the things we need but a vaster array of more and better things. At least he regards the chemical, cellulose, and human ingenuity as two vital factors in encouraging an optimistic outlook.

Companion Book

There is another book that might well be read as a companion volume to Haynes' story about cellulose. This is *Resources and the American Dream,* by Samuel H. Ordway, Jr. (Ronald Press, 55 pages, Price, $2). This small volume is a thought-provoking essay. The things that Ordway has to say have a direct connection—though, perhaps, a very long term one—with the general subject on which Haynes writes: our use of resources. Ordway's book is subtitled "The Theory of the Limits of Growth," which indicates its theme. Ordway predicts that our presently expanding industrial consumption of resources will result in short supply and curtailed production "within forseeable time." As a result of this our way of life will be drastically altered. He feels that unless we are mentally prepared for the changed outlook on life made necessary by its changed physical character, great injury will be done the social order. He suggests, further, that if we do become properly prepared we may find that a life with fewer gadgets and a lower standard of living may produce a world in

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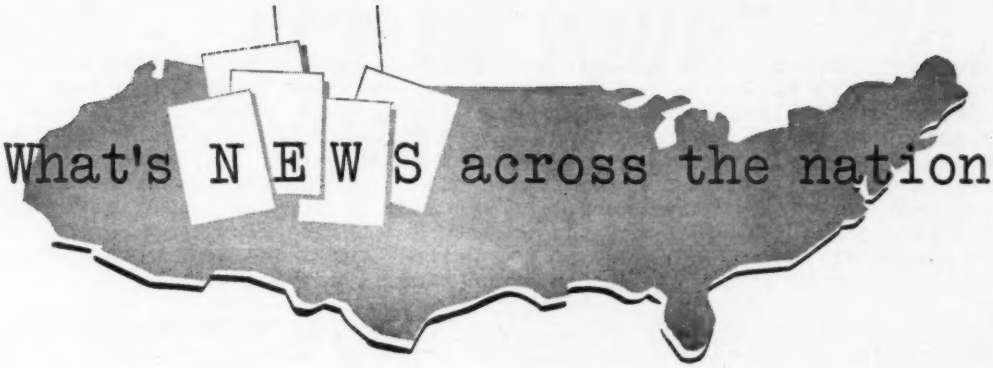
Horace M. Albright
New York 20, N. Y.



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Feature Photo of the Month

Photos used on this page will be of unusual rather than esthetic qualities and subject matter will be restricted to scenes, events, objects or persons related to the use, enjoyment or unique aspects of our renewable natural resources. For each picture selected AMERICAN FORESTS *will pay $10.*

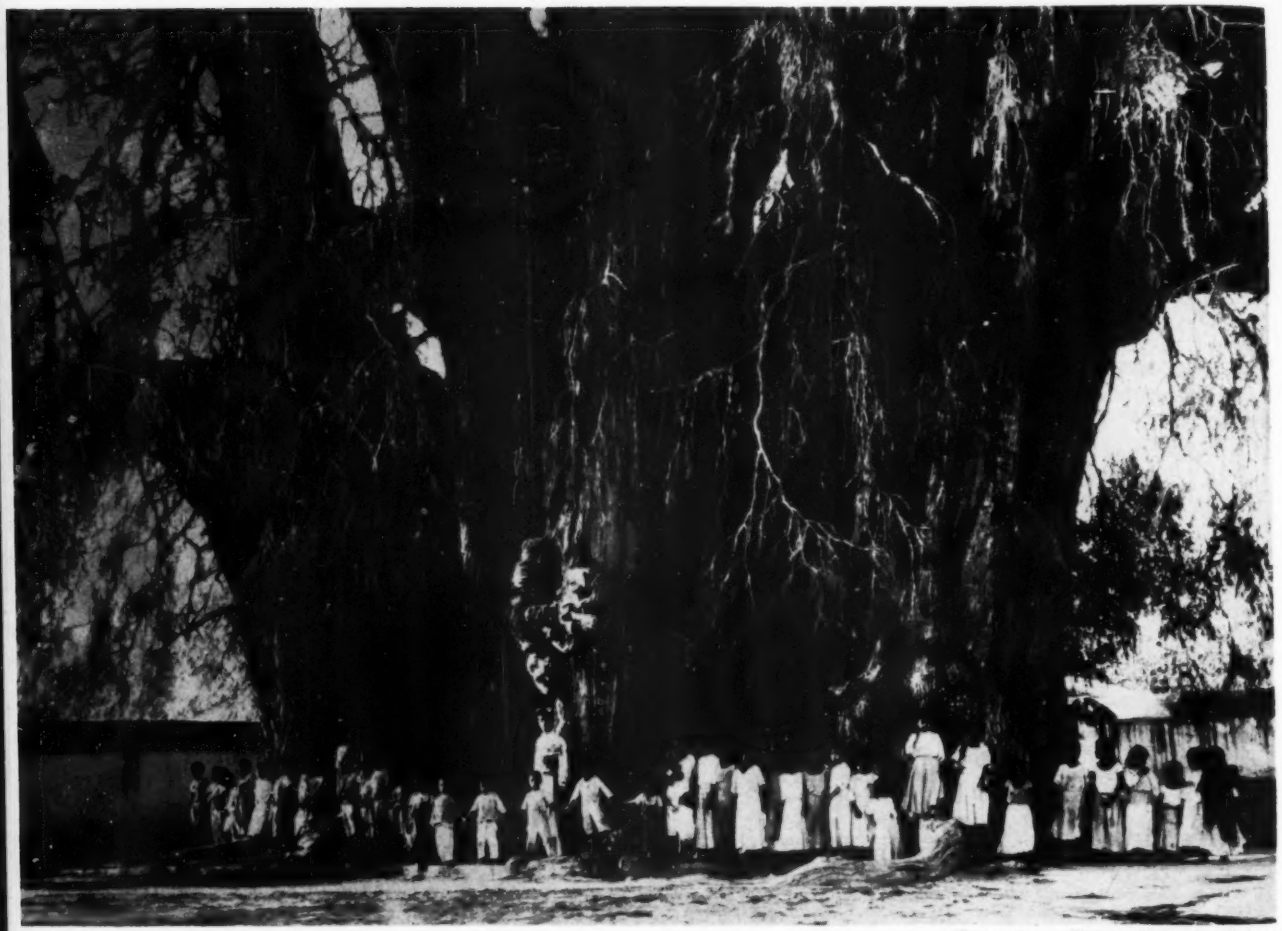

Photo courtesy Minneapolis Sunday Tribune

The Tree of El Tule, which stands in a village church yard near Oaxaca, Mexico. Its trunk is the largest on record—120 feet in circumference. The tree predates Columbus and is still growing. El Tule is a Mexican ahuehuete cypress. Its loftiest branch is 150 feet

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QUETICO—SUPERIOR WILDERNESS, MINNESOTA Canoe Trip
July 10 to July 19
$195 from Ely, Minnesota. Party limited to 15

SHOSHONE—YELLOWSTONE TRAIL, WYOMING
July 20 to July 30
$215 from Cody, Wyoming. Party limited to 25

MAROON BELLS—SNOWMASS WILDERNESS, COLORADO
July 21 to July 31 and August 3 to August 13
$215 from Glenwood Springs, Colorado
Parties limited to 30

WONDERLAND TRAIL, MT. RAINIER NATIONAL PARK, WASHINGTON
August 15 to August 25
Cost $210. Party limited to 25

HIGH UNITAS WILDERNESS, UTAH
July 26 to August 5
$215 from Vernal, Utah. Party limited to 26

SAWTOOTH WILDERNESS, IDAHO
July 27 to August 6 and August 10 to August 20
$205 from Sun Valley, Idaho. Parties limited to 25

SAN JUAN WILDERNESS, COLORADO
August 13 to August 23 and August 28 to September 7
$215 from Durango, Colorado. Parties limited to 25

GLACIER PEAK—LAKE CHELAN, WASHINGTON
August 26 to September 6
$215 from Wenatchee, Washington. Party limited to 25

SEQUOIA—MT. WHITNEY WILDERNESS, CALIFORNIA
August 25 to September 3
$210 from Lone Pine, California. Party limited to 20

PECOS WILDERNESS, NEW MEXICO
September 8 to September 19
$215 from Santa Fe, New Mexico. Party limited to 25

ANNOUNCING SPRING SADDLE TRIP IN GREAT SMOKIES

We take pleasure in announcing our annual spring saddle trip in the Great Smoky Mountains, North Carolina, scheduled for May 19 to May 29. The trip has been timed to catch the colorful festival of wildflowers and flowering trees. Headquarters for the party will be the Cataloochee Ranch near Waynesville. This thousand-acre sheep and cattle ranch is situated on the border of the Great Smoky Mountains National Park. Complete cost—$175 from Asheville, N. C. Party limited to 20.

Write or wire for detailed information itineraries, and reservations.

THE AMERICAN FORESTRY ASSOCIATION

919 Seventeenth Street, N. W. Washington 6, D. C

ONLY $3.75 A DAY FOR FUEL POWERS AND HEATS THIS MILL!

For 8 years now, a Cat* D13000 Engine has been the sole source of power in the Terry Lumber Company's sawmill, Ellington, N. Y. It runs a 56-in. circle saw, 16-ft. 4-block carriage, log turner, log haul, 36-in. 3-saw edger, double end trimmer, 36-in. slash saw and 16 ft. of double sorting chain. Production averages 1000 bd. ft. of northeastern hardwoods an hour—7 hours a day, 20 days a month, all year round.

In cold weather, the D13000 furnishes heat for the mill, too. Warm air, trapped in a hood attached to the front end of the engine, is led through a 12-in. pipe to the plant's working area. Speaking for the company, E. H. Terry has this to say: "Our fuel costs for our D13000 run us about $3.75 a day at the most—and that's cheap operation. This, plus our low repair bill, makes the engine the only one for us."

How are your power costs running? Compare—and you'll find that Caterpillar Diesels can do a money-saving job for you. You have a choice of engines and electric sets, available in 12 sizes up to 500 HP and 315 KW, that exactly meet your needs. They're honestly rated—the power they promise is the power they deliver. They respond readily to load requirements for smooth saw cuts, use No. 2 furnace oil without fouling, start quickly in below-zero temperatures, and are easy to operate and maintain. What's more, they're ruggedly built to deliver year after year of profitable operation.

Your nearby Caterpillar Dealer can be counted on for prompt service and reliable information. Ask him to show you how Caterpillar power can pay off for you!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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